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Anxiety and Emotion Dysregulation in Daily Life: An Experience-Sampling Comparison of Social Phobia and Generalized Anxiety Disorder Analogue Groups

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ANXIETY AND EMOTION DYSREGULATION IN DAILY LIFE: AN

EXPERIENCE-SAMPLING COMPARISON OF SOCIAL PHOBIA AND

GENERALIZED ANXIETY DISORDER ANALOGUE GROUPS

by

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Nathan A. Miller, Ph.D.

University of Nebraska, 2008

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Recent research suggests the presence of both common and disorder-specific emotion regulation deficits across the anxiety disorders (Turk et al., 2005), including those that may be uniquely characteristic of social phobia (SP; Kashdan & Breen, 2008; Kashdan & Steger, 2006; Turk et al., 2005). The purpose of the present study was to replicate and expand upon this growing literature in important directions. The initial portion of this study involved administration of relevant self-report symptom, emotion, and emotion regulation survey measures to a large undergraduate sample (N = 784). Scores on several symptom measures were used to create a SP analogue group, generalized anxiety disorder (GAD) analogue group (anxious control group), and non-anxious control group. Expanding upon previous work, a subset of these participants (SP = 19; GAD = 23; control = 40) then participated in

computerized experience-sampling (ES), a methodology with numerous advantages over traditional self-report (Bolger et al., 2003). ES items designed for this study assessed (in "state" format) situational factors, disorder-specific symptoms, emotional experience, and relevant emotion regulation constructs at randomized intervals on multiple occasions per day over the course of one week. Consistent with previous work, group comparisons of traditional survey data revealed evidence of less positive affect, greater negative affect, and broad emotion regulation deficits in both the SP and GAD groups when compared with non-anxious controls. A greater tendency to suppress the expression of emotion and deficits in emotional awareness and clarity appeared to uniquely characterize the SP group. At the level of moment-to-moment experience, however, no group differences with regard to the experience, expression, awareness, or acceptance of (positive or negative) emotion were found. ES data did provide some further indication that SP may uniquely involve deficits in the clarity of emotion. Implications for emotion dysregulation conceptualizations of SP and GAD, symptoms of these disorders in daily life, limitations, and suggestions for further research are discussed.

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Anxiety disorders represent a significant public
health concern. Greater than one in four Americans will
suffer from a clinically-significant anxiety disorder in
their lifetime (Kessler, Berglund, Demler, Jin, & Walters,
2005). Although our conceptual understanding and treatment
of pathological anxiety has improved considerably over
recent decades (see Barlow, Allen, & Choate, 2004),
significant limitations remain. Following the call of
Barlow (1988), recent years have witnessed a conceptual
expansion involving an increasing focus on affect in
anxiety research and treatment, including the concept of
emotion regulation.

Emotion regulation. Broadly, emotion regulation
refers to the process by which individuals identify,
evaluate, and use strategies to control or influence the
occurrence, experience, intensity, and expressions of
emotions (Frijda, 1986; Gross, 1998; Masters, 1991;
Richards & Gross, 2000). Leading definitions of emotion
regulation (e.g., Gross, 1998) encompass both positive and
negative emotions, with the inclusion of positive emotion a
key factor in theoretically differentiating emotion

regulation from the related concept of "coping." Gratz and Roemer (2004) recently summarized past conceptual and empirical work to provide a broad and clinically-relevant conceptualization of emotion regulation as: (1) emotional awareness and understanding, (2) emotional acceptance, (3) the ability to control impulses and pursue desired outcomes when experiencing strong emotions, and (4) the ability to utilize appropriate strategies of emotion regulation to modulate emotional responses consistent with contextual demands and goals. Emotion *dysregulation* then, according to this conceptualization, occurs when an individual displays a relative absence of any of these abilities (Gratz & Roemer, 2004).

Emotion dysregulation. Theorists have posited that effective emotion regulation is an essential aspect of mental health, and further, that that emotion dysregulation may play a significant role in many forms of psychopathology (e.g., Gross & Muñoz, 1995; Kring, 2001; Rottenberg & Gross, 2003). Consistent with theories that emphasize the importance of the function of maladaptive behaviors and experiences, as opposed to the presence or absence of symptoms (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996), researchers are beginning to incorporate process-oriented frameworks of emotion regulation into

existing theories of psychopathology (e.g., Barlow et al., 2004; Mennin, Heimberg, Turk, & Fresco, 2002) to provide insights about abnormal psychological functioning.

Initial findings provide reason to be optimistic of this pursuit, with hopes that a clearer understanding of how emotion becomes dysregulated in many psychological disorders has the potential to tie together seemingly diverse constellations of symptoms across multiple levels of functioning (Gross & Muñoz, 1995). For example, emotion dysregulation and disruption has been associated with depression (e.g., Rude & McCarthy, 2003), panic disorder (Baker, Holloway, Thomas, Thomas, & Owens, 2004), post-traumatic stress disorder (Cloitre, Scarvalone, & Difede, 1997), and perhaps most notably, borderline personality disorder (Linehan, 1993). Although becoming an ever-increasing focus of clinical research, the literature regarding the role of emotion regulation deficits in the etiology and maintenance of adult anxiety disorders is underdeveloped (Gratz & Roemer, 2004).

Emotion dysregulation in anxiety. Barlow (1988) was the first to conceive of pathological anxiety as essentially representing a problem with the regulation of emotion, particularly the regulation of fear. Indeed, research has demonstrated that anxiety disorders are

characterized by heightened levels of negative affect experience (e.g., Brown, Chorpita & Barlow, 1998; Clark & Watson, 1991). In applying an emotion regulation framework to anxiety disorders, research suggests that these individuals may be overly concerned about the experience and expression of their feelings and may maladaptively attempt to regulate (e.g., ignore, suppress) their emotional experience (Gross & Levenson, 1997). Unfortunately, it appears that such attempts, when applied to negative emotion, may lead to a significant increase in the emotion that is the subject of regulation; resulting in a vicious cycle (Barlow et al., 2004).

For example, Levitt, Brown, Orsillo, and Barlow (2004) instructed participants with panic disorder to either accept or suppress emotional responding during a CO_2 challenge. Suppression was associated with greater reported anxiety, while acceptance was associated more willingness to participate in a second challenge (i.e., less behavioral avoidance). While maladaptive emotional suppression may play a central role across anxiety disorders more generally, recent work (e.g., Turk, Heimberg, Luterek, Mennin, & Fresco, 2005) has expanded this research by examining additional emotion regulation factors simultaneously across specific anxiety disorders.

Current etiological understandings of the development
of pathological anxiety emphasize complex interactions
between biological (e.g., behavioral inhibition; Gray,
1982), generalized psychological vulnerabilities (e.g.,
diminished sense of control), and specific psychological
vulnerabilities (e.g., belief that physical sensations are
dangerous) (Barlow, 2002). While a detailed review of the
etiology of anxiety disorders is not practical here (for a
review see Barlow, 2002), it is important to note that
emotion regulation theories of adult anxiety disorders
(e.g., Mennin et al., 2002) have generally been
conceptualized to supplement and extend (rather than
replace) established theories. In other words, such
perspectives do not suggest that physiology, cognition,
behavior, or interpersonal relationships are crucial to
understanding pathological anxiety, but rather that emotion
and emotional regulation factors deserve additional focus
in their own right, particularly regarding their potential
to tie together these diverse phenomena (Mennin et al.,
2002).

Turk et al. (2005) was the first to systematically
examine and compare the presence of emotion dysregulation
in social phobia (SP) and generalized anxiety disorder
(GAD). Utilizing clinical analogue groups and a cross-

sectional retrospective self-report design, these researchers found evidence for the presence of disorder-common and disorder-specific deficits in emotion regulation across these conditions when compared to non-anxious controls. As is discussed in greater detail below, the current study attempts replicate and extend this line of work initiated by Turk et al. (2005) with a particular emphasis on furthering our understanding of emotion regulation deficits in SP. The next several sections provide a general review of SP and GAD and then discuss the emerging findings regarding emotion dysregulation in these conditions respectively.

Generalized Anxiety Disorder (GAD). GAD is generally considered the most poorly understood and least effectively treated anxiety disorder (Brown, Barlow, & Liebowitz, 1994). Its central feature is the experience of chronic and excessive anxiety and worry about a number of events or activities, with a lifetime prevalence of approximately 5.7% (Kessler et al., 2005). Individuals with GAD find their worry difficult to control, which is often accompanied by additional symptoms such as restlessness, fatigue, and irritability [DSM-IV-TR; American Psychiatric Association (APA), 2000]. GAD has been associated with significant impairment in role functioning, social life,

and overall life satisfaction (Massion, Warshaw, & Keller,

1993) and approximately half of individuals with GAD

indicate that the disorder has caused significant

interference in their life and activities (Wittchen, Zhao,

Kessler, & Eaton, 1994). Most conceptualizations of GAD

have originated from cognitive-behavioral perspectives (see

Heimberg, Turk, & Mennin, 2003). However, in many ways GAD

has been difficult to capture within this paradigm in that

it typically does not involve overt behavioral avoidance

and that the focus of worry is highly variable across

individuals and time (Mennin, 2004).

To address these limitations researchers have begun to

expand their conceptualizations of GAD by utilizing emotion

regulation frameworks to better understand both the nature

(e.g., Mennin, Turk, Heimberg, & Carmin, 2004; Mennin et

al., 2002) and treatment (e.g., Roemer & Orsillo, 2002;

Newman, Castonguay, Borkovec, & Molnar, 2004) of this

disorder. Mennin and colleague's *emotion dysregulation and

disruption model of GAD* (Mennin et al., 2004; 2002) has

been particularly influential. This model postulates that

GAD's core feature of worry may be the result of

ineffective emotion identification and regulation that

motivates its use as a cognitive control strategy. This

model incorporates Borkovec and colleagues' *avoidance model*

of worry (Borkovec, Alcaine, & Behar, 2004) in which worry is thought to be reinforcing by alleviating emotional distress in the short-term, but maladaptively serves to maintain distress in at least three ways: (1) reducing exposure to emotion thereby interfering with emotional processing, (2) counterintuitively intensifying emotional experiences via suppression, and (3) interfering with the practical value gleaned by experiencing emotions.

Borkovec's model represents an integration of empirical evidence suggesting that worry interferes with the physiological (Borkovec & Hu, 1990) and subjective (Wells & Papageorgiou, 1995) facets of emotional arousal. Further, it has been found that worriers themselves tend to endorse this "distraction" function of worry (e.g., Borkovec & Roemer, 1995), and that negative mood induction procedures leads to increases in catastrophic worry (Startup & Davey, 2001), suggesting that its use may be conditioned to occur in response to heightened negative emotional states.

While Borkovec's (2004) model of worry provides an explanation for the cycle of worry in GAD, Mennin and colleagues (Mennin et al. 2002; 2004) have extended the model to address the origins of the emotional avoidance that appears associated with GAD. Specifically, Mennin and colleagues posit that emotions become dysregulated in GAD

through the process of: (1) heightened intensity of emotional experience, (2) poor emotional understanding, (3) negative reactions to emotional states, and (4) use of maladaptive means of managing emotions, with a particular over-reliance on worry as a means to avoid undesired affect.

Providing initial support for this model, Mennin, Heimberg, Turk, and Fresco (2005) found that an analogue GAD group, when compared to non-anxious controls, reported greater intensity of negative emotion expression and expressivity, poorer clarity of emotions, and more difficulty understanding and describing emotions. Similarly, Salters-Pedneault, Roemer, Tull, Rucker, and Mennin (2006) found that GAD status was associated with, among other difficulties, deficits in emotional clarity and acceptance of emotions. Finally, there is evidence from both clinical and non-clinical samples that symptoms of GAD and chronic worry are associated with attempts to control and avoid internal experiences that have been negatively evaluated as well as a tendency to perceive emotional responses as threatening (Mennin et al., 2005; Roemer, Salters, Raffa, & Orsillo, 2005).

Interestingly, Salters-Pedneault et al. (2006) found that GAD status was associated with deficits in emotional

clarity, but not emotional awareness. These authors interpreted these findings to suggest that individuals with GAD may be sufficiently aware that they are experiencing emotion but experience emotion as undifferentiated and confusing. In fact, this finding is consistent with recent work by Novick-Kline, Turk, Mennin, Hoyt, and Gallahger (2005) who unexpectedly found that a rater-coded measure of emotional awareness successfully distinguished between individuals with GAD from controls, with GAD status being associated with *greater* emotional awareness.

Turk et al. (2005) provided a more conservative test of Mennin and colleagues' model of GAD by utilizing both an anxious analogue group (social phobia; SP) and non-anxious control group. Again, results generally supported the model. The GAD group demonstrated greater deficits in the acceptance and identification of emotion compared to non-anxious controls. However, with the exception of the GAD group reporting greater emotional intensity and use of worry than other groups, the SP group demonstrated a similar pattern of deficits, calling into question the uniqueness of these deficits to GAD when compared with SP. Therefore, it is apparent that additional research is needed to outline which aspects of emotion dysregulation are common and specific to GAD and other anxiety disorders.

In particular, these aforementioned results shed light on aspects of emotion dysregulation that may be characteristic of SP.

Social phobia (SP). Approximately 12.1% of the population suffers from clinically significant social anxiety during their lifetime (Kessler et al., 2005). SP, also referred to as social anxiety disorder, is a debilitating disorder characterized by persistent fear and anxiety in social or performance situations (APA, 2000). As such, the pattern of anxious experience for these individuals tends to be highly variable in that the experience of excessive anxiety tends to be relegated to (or in anticipation of) social situations that require interaction or perceived evaluation (Barlow, 1988).

Because of this fear, individuals with SP may have difficulty vocationally and socially (Schneier, Heckelman, Garfinkel, Campeas, Fallon, Gitow, et al., 1994). Further attesting to its disabling nature, individuals with SP have been found to have more physical complaints, lower wages, more thoughts of suicide, and are less likely to have graduated from college than non-anxious peers (Katzelnick, Kobak, DeLeire, Henk, Greist, Davidson, et al., 2001).

Our understanding and commensurate treatments for SP are generally considered more advanced than that of GAD.

As previously discussed, recent evidence offered by Turk et al. (2005) suggests that SP may be characterized by unique and perhaps overlooked deficits in emotion regulation. Namely, both the SP and GAD group reported being more fearful of emotions, suggesting that both disorders appear to involve negative reactivity and less acceptance of emotions when compared to controls. Interestingly, individuals with SP reported paying significantly less attention to their emotions, while the GAD and control groups did not differ on this variable. These findings are consistent with previous work that has demonstrated that socially anxious individuals show deficits in the more circumscribed ability to identify and describe specific emotions, also known as *alexithymia* (Cox, Swinson, Shulman, & Bourdeau, 1995; Fukunishi, Kikuchi, Wogan, & Takubo, 1997).

There is also mounting evidence that positive emotion, relative to negative emotion, may be uniquely dysregulated in SP. Turk et al. (2005) found that individuals with analogue SP indicated being less expressive of positive (but not negative) emotion than either the analogue GAD or control groups. Further, Kashdan and Steger (2006) found that greater trait social anxiety was associated with less positive affect in daily diary reports.

Indeed, a burgeoning line of research by Kashdan and colleagues (Kashdan & Breen, 2008; Kashdan & Steger, 2006) have provided convincing evidence that high levels of social anxiety are uniquely associated with diminished positive affect. These results are consistent with hierarchical structural models of anxiety and mood disorders which have refined Clark and Watson's (1991) original tripartite model of anxiety and depression to suggest that of these disorders, only social anxiety and depression appear to have characteristically low positive affect (Brown et al., 1998).

In review, recent research (particularly that of Turk et al., 2005) indicates that different anxiety disorders may involve some commonalities as well as disorder-specific emotion dysregulation tendencies. Namely, both GAD and SP may be associated with deficiencies in the ability to clearly identify, understand, and accept emotional experiences. There is some evidence to suggest, that GAD may be somewhat uniquely associated with more intense negative emotional experience and greater use of worry, while SP may uniquely involve generally paying less attention to one's emotions and the impoverished experience of positive emotion.

Primary purpose of the current study. As mentioned previously, this study aims to replicate and expand the work of Turk et al. (2005) by examining the presence of common and disorder-specific aspects of emotion dysregulation in SP and GAD. In addition to attempting replicate the findings reported by Turk et al. (2005) using large-scale questionnaire methods, the current study aims to provide a more direct test of the presence and role of these deficits by utilizing experience-sampling methodology (ESM) to capture the presence of hypothesized deficits by means of random repeated assessments, captured during everyday life. In addition, it is notable that the literature appears to suggest that these disorders have characteristic emotion regulation deficits specific to a particular valence of emotion (e.g., greater intensity of negative affect in GAD). Thus far, the literature has failed to explicitly incorporate this seemingly important feature. Therefore, this study aims to provide a critical improvement of previous work by investigating constructs of emotion regulation separately for each valence.

Secondary purpose of the current study. Although not a primary focus of the investigation, this study will provide the unique opportunity to test basic conceptualizations regarding SP and GAD. Perhaps contrary to assumptions,

very little empirical data exists regarding the symptoms and associated traits of particular anxiety disorders as experienced and captured in daily life. In particular, there has been little confirmation of knowledge gleaned from cross-sectional survey and laboratory work in the actual daily experiences of individuals with anxiety disorders, including SP and GAD. Indeed, current conceptualizations of these conditions have relied heavily upon retrospective self-reports, which are inherently subject to numerous biases.

The sections below provide an overview of, and rationale for, the use of analogue clinical groups and experience-sampling methodology. Finally, longitudinal measurement issues are addressed.

Experience-sampling methodology (ESM). ESM refers to a set of empirical methods designed for participants to respond to repeated assessments at specific instances over a predetermined period of time while existing in their naturalistic environments (Scollon, Kim-Prieto, & Diener, 2003). The typical ESM study is 1-2 weeks in duration and asks participants to respond to 2-12 signals per day (for a review see Reis & Gable, 2000). Technological advances, such as the invention of palmtop computers and personal data assistants (PDAs), have made ESM an increasingly

viable research tool, particularly regarding the ability to signal participants at random moments and to ensure that they respond promptly when signaled (Scollon et al., 2003).

There are a number of virtues of ESM over traditional self-report methods (see Bolger, Davis, & Rafaeli, 2003). One important advantage is that ESM minimizes biases in recall inherent to methods using global self-report (Alliger & Williams, 1993), and greater ecological validity of research findings in that participants are sampled in their everyday environments (Scollon et al., 2003). Finally, ESM allows for the modeling of both within and between-person variability across time, both neglected topics within the field of psychology (Bolger et al., 2003).

Concerning the reliability and validity of ESM, Csikszentmihalyi and Larsen (1987) found that: (1) ESM reports of psychological states related in anticipated ways with physical conditions and situational factors, (2) measures of individual differences of various constructs measured using ESM were correlated with independent measures of the same constructs, and (3) ESM can differentiate between groups expected to be different (e.g., patient and non-patient groups).

To date, computerized ESM (and related methodologies) has been successfully used to study a variety of phenomenon, including emotion-related processes (Feldman-Barrett, 2004) and subjective well-being (Oishi, 2002). According to Dijkman-Caes and deVries (1987), ESM is ideally suited for the study of anxiety variability across time in real-life situations and can quantitatively track patterns of anxiety and its relationship to other variables at both the individual and group-level.

A handful of studies have examined anxiety-relevant phenomena using ESM and related methods, such as panic (Dijkman-Caes & deVries, 1991) and social anxiety (Kashdan & Steger, 2006). Findings from the few published applications of ESM to the study of anxiety disorder groups have even challenged diagnostic conceptualizations. For example, Dijkman-Caes, deVries, Kraan, and Volovics (1993) found no difference between those with panic disorder with and without agoraphobia in avoidance variables, calling into question the reliance on retrospective reports of avoidance of public places. To date, no known ESM studies have examined in clinical or analogue SP or GAD. Taken together then, ESM is well-suited to examine the constructs of interest for this study and recent technological

advances make it a practical alternative with the potential
to provide valuable insights.

   Longitudinal measurement. ESM involves repeated
assessments of various self-report items over the course of
the day. Consistent with basic understandings of
measurement, the nature of this methodology enhances
reliability via the large number of repeated assessments.
One consequence, however, is that constructs that are the
focus of study must typically only be measured using a
limited (relative to traditional self-report) number of
items. This fact raises questions regarding whether
complex latent constructs can be validly measured using
several, or even a single, frequently administered item.

   Keeping in mind that reliability is a necessary
precursor to validity and assuming the limited number of
items administered maximizes the validity of the constructs
measured, repeated assessments of a limited set of items
can serve the same role as multiple items on larger
instruments. While a certain degree of construct validity
will likely be sacrificed in applying this methodology,
Csikszentmihalyi and Larsen (1987) provide compelling data
supporting applications of ESM in psychopathology research.
Further, anxiety and avoidance have been successfully
measured using single items and have been shown to decrease

over the course of treatment (in a manner similar to

established measures) in individuals with SP (Przeworski &

Newman, 2004) and GAD (Newman, Consoli, & Taylor, 1999).

While the measurement of more complex emotion regulation

constructs may be of greater concern in this regard,

research suggests that self-reports have been found to be a

particularly strong method of assessment when dealing with

immediate experience (Ericsson & Simon, 1980; Mischel,

1981).

Statement of Purpose

Our current understandings of SP and GAD are heavily

influenced by measures that ask individuals to make general

statements about their behavior and experiences

retrospectively. Further, research exploring deficits in

the regulation of emotion in these conditions have thus far

relied heavily upon similar methods. Additionally, few

studies have sought to capture these variables in real-time

within naturalistic environments, nor has the regulation of

positive and negative emotion been investigated separately.

This study intends to replicate and extend recent work

emerging from emotion dysregulation conceptualizations of

SP and GAD by utilizing computerized ESM and groups of

individuals representing clinical analogues of these

disorders to: (1) test hypotheses regarding both common and

disorder-specific aspects of emotion and emotion dysregulation across these disorders (with a particular emphasis on SP), and (2) provide valuable confirmation of generally accepted conceptualizations regarding the symptoms and behaviors associated with these disorders in daily life.

Hypotheses

Tests of current general conceptualizations of SP and GAD.

1(a). Consistent with widely accepted notions about emotional experience of individuals with anxiety disorders, the SP and GAD analogue groups will both report greater anxiety experience than controls.

1(b). Consistent with widely accepted notions about SP (e.g., APA, 2001), the SP analogue group will report greater avoidance of social situations, more time spent alone, and greater social anxiety symptoms than other groups.

1(c). Consistent with widely accepted notions about GAD (e.g., APA, 2001), the GAD analogue group will report greater symptoms of generalized anxiety than other groups.

Tests of emotion experience and expression.

2(a). Based upon growing evidence that the dysregulation of positive emotion may differentiate SP from other anxiety disorders (e.g., Brown et al., 1998; Kashdan

& Steger, 2006; Turk et al., 2005), the SP analogue group will report less positive emotion experience and expression than other groups.

2(b). Following from both recent findings of Turk et al. (2005) and tests of Mennin and colleagues' model of GAD, the GAD analogue group will report greater negative emotion experience and expression than other groups.

Tests of emotional clarity.

3(a). Turk et al. (2005) found that GAD and SP analogue groups, when compared to controls, reported similar deficits in identifying emotions and emotional clarity. Therefore, it is predicted that the analogue groups will report lower levels of emotional clarity than controls. However, given the aforementioned evidence that positive emotion may be particularly dysregulated in SP and negative emotion in GAD, it is more specifically expected that the SP analogue group will report poorer clarity of positive emotions compared to other groups and that the GAD analogue group will report poorer clarity of negative emotions compared to other groups.

Tests of reactions to emotion.

4(a). Recall that Turk et al. (2005) found that both SP and GAD analogue groups reported being more fearful of positive and negative emotional experiences. Therefore, it

is expected that both clinical analogue groups will both report less acceptability of (both positive and negative) emotions than controls, but will not differ significantly from each other with regard to this variable.

4(b). Based upon Mennin and colleagues' model of GAD, as well as the findings of Novick-Kline et al. (2005), the GAD analogue group will report paying more attention to negative emotion than other groups.

4(c). Following from the findings of Turk et al. (2005) regarding self-reported attention to emotions, the SP analogue group will report paying less attention to (positive and negative) emotions than other groups.

Method

Participants

Participants were recruited from the pool of undergraduate students at the University of Nebraska-Lincoln registered with the university's Experimetrix research subject sign-up system between the Spring 2006 and Spring 2008 semesters. The sample primarily consisted of those enrolled in the introductory psychology course (PSYC181), but also included those from various other psychology classes that awarded credit for research participation.

A total of 784 participants provided complete and unique initial survey data. Consistent with the demographics of the local undergraduate population, the survey sample was predominantly female (71.7%) and Caucasian (83.8%), with a mean age of 19.71 (*SD* = 2.76). Table 1 below displays the demographic composition for the full survey sample.

Table 1. Univariate demographic summaries and comparisons by group for the initial survey sample.

Variable	Total (Full Sample) M (SD)	N (%)	SP M (SD)	N (%)	GAD M (SD)	N (%)	Control M (SD)	N (%)
Age	19.71 (2.76)	784 (100)	19.85 (3.54)	79 (100)	19.83 (3.13)	108 (100)	19.64 (2.60)	527 (100)
Valid		778 (99.2)		79 (100)		106 (98.1)		523 (99.2)
Missing		6 (0.8)		0 (0.0)		2 (1.9)		4 (0.8)
Gender		784 (100)		79 (100)		108 (100)		527 (100)
Men		214 (27.3)		26 (32.9)		14 (13.0)		152 (28.8)
Women		562 (71.7)		53 (67.1)		93 (86.1)		368 (69.8)
Missing		8 (1.0)		0 (0.0)		1 (0.9)		7 (1.3)
Ethnicity		784 (100)		79 (100)		108 (100)		527 (100)
African-American		24 (3.1)		3 (3.8)		4 (3.7)		16 (3.0)
Asian		31 (4.3)		6 (7.6)		2 (1.9)		23 (4.4)
Caucasian		657 (83.8)		62 (78.5)		90 (84.1)		446 (84.6)
Hispanic		38 (4.8)		4 (5.1)		7 (6.5)		21 (4.0)
Middle Eastern		3 (0.4)		0 (0.0)		0 (0.0)		2 (0.4)
Native American		7 (0.9)		2 (2.5)		2 (1.9)		3 (0.6)
Pacific Islander		1 (0.1)		0 (0.0)		0 (0.0)		1 (0.2)
"Other"		21 (2.7)		2 (2.5)		2 (1.9)		15 (2.8)
Missing		1 (0.1)		1 (1.3)		0 (0.0)		0 (0.0)

Note. N = number of participants; SP = social phobia analogue group; GAD = generalized anxiety disorder analogue group; M = mean; SD = standard deviation.

Table 1 above also displays demographic data for the 714 participants who met predetermined selection criteria based upon their responses to specified self-report measures. See the Procedure section below for a detailed description of selection criteria. Results of statistical comparisons indicate that the groups did not differ significantly as a function of age [$F(2,705) = 0.35$, $p = .70$] or ethnicity [$\chi^2(14) = 17.93$, $p = 0.21$]. The groups did differ significantly with regard to gender [$\chi^2(2) = $

13.04, p = .001] such that the GAD analogue group was comprised of a larger proportion of women (86.1%) when compared with the control (69.8%) or SP analogue (67.1%) groups.

Participants who both qualified for analogue group membership and provided adequate contact information (N = 436) were eligible for recruitment for participation in the experience-sampling (ES) portion of the study. In total, 252 (35.3% of those who qualified for analogue group membership; 57.8% of those who also provided valid contact information) were actively recruited for further participation. Due to the lower of frequency membership in the analogue groups, recruitment efforts varied drastically by group. Namely, 40.6% of qualified control participants were contacted, while 100% and 98.6% of the SP and GAD analogue group members were respectively contacted.

Following recruitment procedures, ES data was successfully collected from a total of 82 participants (19 SP analogue; 22 GAD analogue; 41 control), comprising 10.5% of the initial survey sample, 11.5% of those who qualified for group membership, 18.8% of those who also provided valid contact information, and 32.5% of all of those contacted. Participation rates were similar across groups (32.8%, 35.1%, and 30.1% for the control, SP analogue, and

GAD analogue groups respectively). Table 2 below displays

detailed recruitment statistics for the full sample and by

group.

Table 2. Number of participants at successive steps of
recruitment.

Step	Total	Group		
		SP	GAD	Control
1 Provided unique and complete questionnaire data.	784(100)	--	--	--
2 Qualified for group membership.	714(100) (100)	79(11.1) (100)	108(15.1) (100)	527(73.8) (100)
3 Provided valid contact information.	436(100) (61.1)	54(12.4) (68.3)	74 (17.0) (68.5)	308(70.6) (58.4)
4 Were solicited for ES participation.	252(100) (35.3)	54(21.4) (68.3)	73 (29.0) (67.6)	125(49.6) (23.7)
5 Provided valid ES data.	82 (100) (11.5)	19(23.2) (24.1)	22 (26.8) (20.4)	41 (50.0) (7.8)

Note. SP = social phobia analogue group; GAD = generalized
anxiety disorder analogue group; ES = experience-sampling.
Numbers to the right of each value in () represent
percentages within each step. Numbers below each value in
() represent percentages of the total at step 2.

    The ES sample was predominantly Caucasian (62.9%) and

female (79.3%), with a mean age of 20.08 (*SD* = 4.30) years.

The ES sample did not differ significantly from those who

qualified for group membership but did not provide ES data

with regard to age [$F(1,706)$ = 1.70, *p* = .19], ethnicity

[$\chi^2(7)$ = 10.03, *p* = .19], or gender [$\chi^2(1)$ = 1.96, *p* = .16].

Demographic statistics for the ES sample and results of

statistical comparisons with non-ES participants are

displayed in Table 3 below.

Table 3. Univariate demographic summaries by participation status.

Variable	ES Participants (Groups Combined)		Non-ES Participants	
	N (%)	M (SD)	N (%)	M (SD)
Age	82 (100)	20.08 (4.30)	632 (100)	19.64 (2.54)
Valid	80 (97.6)		628 (100)	
Missing	2 (2.4)		0 (0)	
Gender	82 (100)		632 (100)	
Men	17 (20.7)		175 (27.7)	
Women	65 (79.3)		449 (71.0)	
Missing	0 (0.0)		8 (1.3)	
Ethnicity	82 (100)		632 (100)	
African-American	2 (2.4)		21 (3.3)	
Asian	3 (3.7)		28 (4.4)	
Caucasian	68 (82.9)		530 (83.9)	
Hispanic	5 (6.1)		27 (4.3)	
Middle Eastern	0 (0.0)		2 (0.3)	
Native American	0 (0.0)		7 (1.1)	
Pacific Islander	1 (1.2)		0 (0.0)	
"Other"	3 (3.7)		16 (2.5)	
Missing	0 (0.0)		1 (0.2)	

Note. ES = experience-sampling; M = mean; SD = standard deviation; N = number of individuals. SP = social phobia analogue group; GAD = generalized anxiety disorder analogue group.

Finally, Table 4 below displays demographic variables and results of comparison by analogue group status for the ES participants only. Of note, groups did not differ significantly with regard to age [$F(1,77) = 1.06$, $p = .35$], gender [$\chi^2(2) = 2.23$, $p = .33$], or ethnicity [$\chi^2(10) = 9.23$, $p = .51$].

Table 4. Univariate demographic summaries of ES participants by group.

	SP		GAD		Control	
	N	*M*	*N*	*M*	*N*	*M*
Variable	(%)	(*SD*)	(%)	(*SD*)	(%)	(*SD*)
Age	19	20.68	23	20.78	40	19.34
	(100)	(6.23)	(100)	(5.53)	(100)	(1.15)
Valid	19		23		38	
	(100)		(100)		(95.0)	
Missing	0		0		2	
	(0.0)		(0.0)		(5.0)	
Gender	19		23		40	
	(100)		(100)		(100)	
Men	3		3		11	
	(15.8)		(13.0)		(27.5)	
Women	16		20		29	
	(84.2)		(87.0)		(72.5)	
Missing	0		0		0	
	(0.0)		(0.0)		(0.0)	
Ethnicity	19		23		40	
	(100)		(100)		(100)	
African-American	1		0		1	
	(5.3)		(0.0)		(2.5)	
Asian	2		0		1	
	(10.5)		(0.0)		(2.5)	
Caucasian	13		20		35	
	(68.4)		(87.0)		(87.5)	
Hispanic	1		2		2	
	(5.3)		(8.7)		(5.0)	
Middle Eastern	0		0		0	
	(0.0)		(0.0)		(0.0)	
Native American	0		0		0	
	(0.0)		(0.0)		(0.0)	
Pacific Islander	1		0		0	
	(5.3)		(0.0)		(0.0)	
"Other"	1		1		1	
	(5.3)		(4.3)		(2.5)	
Missing	0		0		0	
	(0.0)		(0.0)		(0.0)	

Note. ES = experience-sampling; *M* = mean; *SD* = standard deviation; *N* = number of individuals; SP = social phobia analogue group; GAD = = generalized anxiety disorder analogue group.

Materials

Initial Survey Self-Report Measures

Demographic Questionnaire. A basic demographic

questionnaire was administered as part of the initial

survey battery. See the Appendix A for a copy of this measure.

Social Anxiety Interaction Scale (SAIS; Mattick & Clarke, 1998). The SIAS is a widely used self-report measure of anxiety during social interaction situations. It consists of 20 items addressing cognitive, affective, and behavioral reactions to interactions in groups or dyads. Items are rated on a five-point Likert-type scale ranging from 0 (*Not at all Characteristic or True of Me*) to 4 (*Extremely Characteristic or True of Me*). The SIAS is scored by summing all of the items, with total scores ranging from 0 to 80.

Higher scores on the SIAS are considered reflective of greater anxiety in social interaction situations. Numerous studies (Heimberg & Turk, 2002; see Orsillo, 2001) have demonstrated the excellent reliability and construct validity of the SIAS. This measure has been shown to successfully distinguish individuals with SP from individuals with other anxiety disorders and from non-anxious individuals (Mattick & Clarke, 1998; Peters, 2000). Heimberg, Mueller, Holt, Hope, and Liebowitz (1992) found that a cut-off score of 34 on the SIAS successfully distinguished between community controls (82% correctly classified) and individuals with social phobia (82%

correctly classified). Brown, Turovsky, & Heimberg (1997)

have since cross-validated use of this cut-off score.

Rodebaugh, Woods, Heimberg, Liebowitz, and Schneier

(2006) recently reported compelling evidence that casts

doubt upon the traditionally assumed unifactorial nature of

the SIAS, and that clients and undergraduates may approach

some items of the SIAS differently. However, they

concluded that these differences are relatively small and

likely results in a bias towards false negatives (i.e.,

screening out individuals who actually have social phobia).

The SIAS was included in this study to identify

individuals with heightened social anxiety for inclusion in

the SP analogue group. Alpha reliability in this sample

was excellent (.92).

Social Phobia Diagnostic Questionnaire (SPDQ; Newman,

Kachin, Zuellig, Constantino, & Cashman-McGrath, 2003).

The SPDQ is a self-report diagnostic questionnaire for

social phobia based upon DSM-IV (APA, 2000) criteria. The

style of the SPDQ was modeled after the social phobia

section of the Anxiety Disorders Interview Schedule for the

DSM-IV (ADIS-IV, Brown, DiNardo, & Barlow, 1994), a

clinician-administered semi-structured interview. The SPDQ

is comprised a series of three yes/no questions asking

about excessive fear, embarrassment, and avoidance of

socially-evaluative situations, followed by a list of 16

social situations to which respondents rate their fear and

avoidance on a Likert-type scale ranging from 0 (*No Fear/*

Never Avoid) to 4 (*Very Severe/Always Avoid*).

Next, the SPDQ includes several yes/no questions

assessing the timing of the onset of fear in social

situations, and whether the respondent views their fear as

unreasonable. Two Likert-type scales are then presented

regarding perceived level of severity and impairment from

social fears ranging from 0 (*No Interference/Not*

Distressing) to 4 (*Very Severe or Disabling/Very Severely*).

Finally, respondents answer yes/no whether their ability to

achieve in occupation or academic settings has been

negatively influenced by social fears. The authors provide

a formula to dimensional scoring the SPDQ, with total

scores ranging from 0 to 27 (Note: avoidance ratings are

not used when scoring this measure).

In the initial validation study of the SPDQ, Newman et

al. (2003) utilized receiver operating characteristics

(ROC) analysis and concluded that a cut-off score of 7.38

provides the optimal balance of specificity (85%) and

sensitivity (82%), with a kappa agreement of .66 with the

ADIS-IV. Further, Newman et al. (2003) found that the SPDQ

has good internal consistency (α = .95), split-half

reliability (*r* = .90), test-retest reliability, and
convergent and discriminant validity. Finally, Newman et
al. (2003) demonstrated that a group of undergraduates who
exceeded the cut-off on the SPDQ did not differ
meaningfully from a community sample of individuals with
social phobia on social anxiety symptom measures. The SPDQ
was included in this study to provide convergent validity
for individuals selected for the SP analogue group.

   Generalized Anxiety Disorder Questionnaire – IV (GAD-
Q-IV; Newman, Zuellig, Kachin, Constantino, Przeworski,
Erickson et al., 2002). The GAD-Q-IV is a self-report
measure used to identify individuals likely to have GAD
based upon DSM-IV (APA, 2000) criteria. This measure has
been commonly utilized as an efficient and cost-effective
method for identifying individuals for inclusion in GAD
clinical analogue groups (e.g., Mennin et al., 2005,
Novick-Kline et al., 2005; Turk et al. 2005). The GAD-Q-IV
is comprised of four yes/no questions regarding the
presence of frequent, excessive and uncontrollable worry
for at least the last six months, provides a place to list
(up to six) of his or her most frequent topics of worry,
and a checklist of six common symptoms. The final two
items ask respondents to rate the degree to which worry and
physical symptoms interfere with their lives and cause

distress on a nine-point Likert-type scale ranging from 0

(*None/No Distress*) to 8 (*Very Severely/Very Severe*

Distress). The developers of this measure provide a

formula for dimensional scoring, with total scores ranging

from 0 to 13.

Newman et al. (2002) investigated the discriminant

validity of the GAD-Q-IV in a sample of individuals with

GAD, panic disorder, social phobia, and controls. Using

ROC analysis, it was found that a cut-off score of 5.7 on

the GAD-Q-IV provides the optimal balance of sensitivity

(83%) and specificity (89%). Kappa agreement between the

GAD-Q-IV and the ADIS-IV was .67, with 88% of participants

correctly classified. Newman et al. (2002) demonstrated

the acceptable concurrent and test-rest validity of this

measure, and showed that a sample of undergraduates who

exceeded the clinical cut-off on the GAD-Q-IV did not

differ meaningfully from a sample of a sample of

individuals formally diagnosed with GAD on two common GAD

symptom measures. The GAD-Q-IV was included in this study

to identify individuals for inclusion in the GAD analogue

group.

Penn State Worry Questionnaire (PSWQ; Meyer, Miller,

Metzger, & Borkovec, 1990). The PSWQ is the most commonly

used measure of pathological worry. It is a 16-item self-

report inventory of worry frequency, intensity, and
uncontrollability. Items ask respondents to rate their
agreement with various statements about how typical each is
of them on a five-point Likert-type scale ranging 1 (*Not at
all Typical*) to 5 (*Very Typical*). Scores on this measure
range from 16 to 80, with higher scores indicative of
higher levels of habitual worry. The PSWQ has demonstrated
good internal consistency and adequate to good test-retest
reliability (Molina & Borkovec, 1994). Indeed, scores on
the PSWQ have been found to be higher among individuals
with GAD than any other anxiety disorder group (Brown,
Antony, & Barlow, 1992).

Recently, the PSWQ has been used to screen large
convenience samples to identify individuals with probable
GAD (e.g., Mennin et al., 2004). Utilizing a large
undergraduate sample, Behar, Alcaine, Zuellig, and Borkovec
(2003) applied ROC analysis to investigate the ability of
the PSWQ to discriminate individuals with and without GAD.
They found that a cut-off score of 62 provided the best
balance of sensitivity (.86) and specificity (.75). A
limitation this study was the use of a self-report
diagnostic measure (i.e., the GAD-Q-IV) to establish
diagnoses for comparison. Fresco, Mennin, Heimberg, and
Turk (2003) further explored the utility of the PSWQ as a

screener for GAD by utilizing structured clinician-administered interviews to establish diagnoses for comparison in a treatment-seeking community sample. It was found that a cut-off score of 65 provided the ideal balance of sensitivity and specificity.

The PSWQ was included in this study to provide additional validation regarding the selection of individuals for the GAD analogue group. Alpha reliability in this sample was excellent (.94).

Positive and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988). The PANAS consists of 20 adjective terms describing different valenced affective states (10 positive and 10 negative). Respondents are asked to rate the degree to which they experience each state "in general" rated on a five-point scale ranging from 1 (*Very Slightly or Not at all*) to 5 (*Extremely*). This measure produces a dimensional assessment of general negative affectivity (NA) and general positive affectivity (PA), each ranging from 10 to 50, with higher scores reflecting the greater habitual experiences of respective affective states.

The PANAS has been shown to have excellent convergent and discriminant relationships with lengthier mood measures (Watson et al., 1988) and has been used extensively in both

mood and psychopathology research (see Watson, 2000). The

PANAS was included in this study to assess individuals'

trait affectivity and to provide convergent evidence

regarding the validity of the ES assessment of positive and

negative mood states. Alpha reliabilities in this sample

were good (.87 and .89 for the NA and PA scales

respectively).

Emotion Regulation Questionnaire (ERQ; Gross & John,

2003). The ERQ is comprised of 10 items designed to assess

trait individual differences in the habitual use of two

theoretically-relevant strategies of emotion regulation:

cognitive reappraisal (e.g., "I control my emotions by

changing the way I think about the situation I'm in") and

expressive suppression (e.g., "I control my emotions by not

expressing them"). Respondents are asked to indicate the

extent to which they agree with each statement on a seven-

point scale from 1 (*Strongly Disagree*) to 4 (*Neutral*) to 7

(*Strongly Agree*), with higher scores reflective of greater

habitual use of the respective strategy.

Gross et al. (2003) demonstrated that the ERQ has

acceptable reliability and validity. The ERQ was included

in this study to provide cross-sectional assessment of

these emotion regulation constructs and evidence regarding

the validity of the ES assessment of emotional

expressivity. Alpha reliabilities for the ERQ in this

sample ranged from good (.80 for cognitive reappraisal) to

acceptable (.78 for expressive suppression).

   Difficulties in Emotion Regulation Scale (DERS; Gratz

& Roemer, 2004). The DERS is a 36-item measure that

assesses emotion regulation deficits across six dimensions:

emotional awareness, emotional acceptance, emotional

clarity; and when upset, the perceived ability to engage in

goal-directed behavior, refrain from impulsive behavior,

and access to effective regulation strategies. Respondents

are asked to rate how often each statement applies to them

on a five-point scale, ranging from 1 (*Almost Never*) to 5

(*Almost Always*). Total scores on the DERS range from 36 to

180, with higher values reflective of greater deficits in

emotion regulation.

   In its initial validation (Gratz & Roemer, 2004), the

DERS demonstrated good psychometric properties and provided

empirical support for the multidimensional

conceptualization of the six respective areas of emotion

dysregulation. The DERS was included in this study

because, to date, it is the most cohesive assessment of

clinically-relevant deficits in emotion regulation and can

be readily mapped onto the constructs examined by Turk et

al. (2004). Further, this measure was included to provide

evidence regarding the validity of emotion dysregulation constructs assessed via ES. Alpha reliability in this sample ranged from acceptable to good for the DERS subscales (.79 - .89) and was excellent for the total scale (.93).

Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a widely used 21-item measure of the presence and severity of depressive symptomology (e.g., agitation, worthlessness, poor concentration) in both normal and psychiatric populations (Steer, Kumar, Ranieri, & Beck, 1998). For each item, participants are asked to select from four descriptions of varying symptom severity (ranging from 0 to 3) that best describe their experience over the previous two weeks. Total scores on this measure range from 0 to 63, with higher scores reflective of more severe depression.

The BDI-II has demonstrated high internal consistency (alpha's ranging from .91 to .93) in undergraduate samples (Beck et al., 1996; Dozois, Dobson, & Ahnberg 1998). One-week test-retest reliability of the BDI-II is .93, and it has demonstrated convergent validity via high correlations with other measures of depression (Beck et al., 1996). The BDI-II was included in this study as an indicator of individual differences in depression, which often co-occurs

with anxiety. Alpha reliability for the BDI-II in this sample was excellent (.90).

Experience-Sampling (ES) Items

For the ES portion of the study, a total of 54 items (51 of which were used in this study) were administered via a personal digital assistant (PDA) device. Appendix B displays the ES items and associated response options. Given the constraints inherent to ESM studies, several constructs were assessed by means of a single broadly-worded item (see descriptions below). All items asked respondents to answer questions regarding their current (that is, "at this moment") feelings, experiences, and environments.

Social anxiety. State social anxiety was assessed by seven items modified from those developed by Kashdan and Steger (2006) to address key features of the social anxiety construct, including embarrassment and fear of negative evaluation. Items were rated on a scale ranging from 0 (*Very Slightly or Not at All*) to 100 (*Very Much*). Item ratings were then averaged to create a total index, with higher scores reflective of greater state social anxiety. Alpha reliability for in this sample was excellent (.94).

Social avoidance. The moment-to-moment avoidance of social situations was assessed by two items. One item

asked participants to rate how much they were currently avoiding a social situation on a scale ranging from 0 (*Very Slightly or Not at All*) to 100 (*Very Much or Completely*), with higher ratings indicative of greater social avoidance. The second item asked respondents to indicate the nature of their current social context (i.e., "Who are you with?"). Respondents were given multiple response options, with higher relative frequencies of the response "Alone" considered indicative of greater social avoidance.

Generalized anxiety. State generalized anxiety symptoms were assessed by eight items derived from the list of those associated with GAD in DSM-IV-TR (APA, 2000) including worry, anxiety, irritability, and muscle tension. Respondents were asked to rate each item on a scale ranging from 0 (*Very Slightly or Not at All*) to 100 (*Very Much*). Item ratings were then averaged to create an overall index, with higher scores indicative of greater levels of state generalized anxiety. Alpha reliability in this sample was excellent (.90).

Emotional intensity. The intensity of state emotional experience was assessed by 16 items: eight positively valenced (relaxed, proud, excited, appreciative, enthusiastic, happy, joy, and amused) and eight negatively valenced (sluggish, afraid, sad, angry, anxious, nervous,

guilty, and ashamed). Items were selected to represent the

range of prototypical positive and negative emotional

states previously assessed in ESM work (e.g., Feldman-

Barrett, 1998; Kashdan & Steger, 2006). Respondents were

asked to rate each item on a scale ranging from 0 (*Very*

Slightly or Not at All) to 100 (*Very Much*), with higher

ratings reflective of more intense state emotional

experience. Similarly valenced item ratings were averaged

to create a positive and negative index of emotional

intensity. Alpha reliabilities for the positive and

negative affect domains were excellent (.94 and .91,

respectively).

   Emotion attention/awareness. The degree to which

participants are attending to, and aware of, their current

emotional experience was assessed by six items adapted from

the DERS (Gratz et al., 2004). Specifically, respondents

were asked to indicate how much of their attention they

were paying to their emotions, how much they were thinking

about them, and how valuable they were finding them to be

at the current moment. Respondents were asked to make

separate ratings with regard to their degree of

attention/awareness to positive and negative emotions on a

scale ranging from 0 (*Very Little or None at All*) to 100

(*Very Much or Nearly All*), producing a separate index for

each.   Higher scores were considered reflective of paying
greater attention to, and having greater awareness of,
one's current emotions.   Because many of the other ES items
asked participants to report (and thereby attend to)
various aspects of emotional experience, the items for this
construct were always presented first (in randomized
order).   Alpha reliabilities for this construct were good
(.87) and acceptable (.78) for positive and negative
emotion respectively.

   Emotional expression.   The degree to which
participants were being emotionally expressive at given
moment was assessed by two items.   Respondents were simply
asked to separately rate how much positive and negative
emotion they were current outwardly expressing on a scale
ranging from 0 (*Very Slightly or Not at All*) to 100 (*Very
Much*).   Higher scores on these items were considered
reflective of greater state emotional expressivity.

   Emotional clarity.   State emotional clarity was
assessed by six items that asked respondents to indicate
the degree to which their current emotions made sense, were
confusing, and were clear.   Items were adapted from the
Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman,
Turvey, & Palfai, 1995) and the DERS (Gratz et al., 2004),
and were rated on a scale ranging from 0 (*Very Slightly or*

None at All) to 100 (*Very Much or Complete*). Separate indices for positive and negative emotions were produced, with higher scores reflective of greater state emotional clarity. Alpha reliabilities with regard to both positive and negative emotions were good (.86 and .87, respectively).

   Emotional acceptance. State emotional acceptance was captured by six items adapted from the Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004) and DERS (Gratz et al., 2004), and asked respondents to indicate the degree to which they felt "okay" with, wanted to change, and felt "at ease" with their current emotional experience. Separate ratings were made for positive and negative emotions, producing a separate index for each. Items were rated on a scale ranging from 0 (*Very Slightly or Not at All*) to 100 (*Very Much or Completely*). Higher scores were considered reflective of greater state emotional acceptance. Alpha reliabilities for assessment of this construct were excellent (.86) with regard to positive emotion, and good (.88) with regard to negative emotion.

Experience-Sampling Software and Equipment

   A fleet of PalmPilot m150™ brand personal data assistants (PDAs) were utilized for ES data collection. This particular brand and model was selected because it is

economical, with adequate battery life, screen size, and alarm capabilities, and is compatible with available software. PDAs were programmed with The Experience Sampling Program, version 4.0 (ESP 4.0; Barrett & Feldman-Barrett, 2005). ESP is a pre-packaged, open-source program specifically designed for ES research using PDAs running the Palm Operating System™. Importantly, ESP can be configured to accommodate user specifications regarding alerting participants, delivering questionnaires, and capturing responses.

<div align="center">Procedure</div>

Initial survey battery. As previously mentioned, the initial stage of this study involved screening a large number of undergraduate participants from which groups of interest were recruited to complete ES procedures. Initial survey questionnaires were administered in large group format. Informed consent forms were first distributed. Those under the age of 19 were required to provide a completed parental consent form in order to participate. Students received course credit (as determined by their instructor) for completing the questionnaire battery. Participants interested in being contacted regarding future paid research were asked to provide their contact information (name, electronic mail address, and phone

number). The questionnaire battery required approximately 50 minutes to complete. Following completion of the questionnaires, debriefing forms were distributed.

Participant selection. Selection criteria were applied to data acquired via initial survey data collection. The purpose of selection criteria was to create: (1) an analogue social phobia group (SP), (2) an analogue generalized anxiety disorder group (GAD), and (3) and non-anxious control group (control).

The originally proposed selection criteria included use of multiple measures, including the SIAS, SPDQ, GAD-Q-IV, and PSWQ. The SP group was to be comprised of participants who exceeded the suggested cut-off on the SIAS and SPDQ, but not on other measures. The GAD group was to be comprised of participants who exceeded the suggested cut-off on the GAD-Q-IV and PSWQ, but not other measures. Finally, the control group was proposed to include individuals who did not exceed cut-offs on any measures.

However, as was suspected a priori, it became apparent during the early stages of data collection that the originally proposed selection criteria were far too conservative to be feasible. For example, application of this criteria resulted in only 27 (3.4%) and 54 (6.9%) out of 784 participants qualifying for the GAD and SP groups,

respectively. Given that only a portion of these participants provided valid contact information and would respond to solicitation, somewhat more liberal selection criteria (as was reviewed as a feasible alternative in the proposal document) was necessitated (and is described in detail below). Of note, the revised selection criteria match that of Turk et al. (2005) and are outlined next.

The SP analogue group consisted of individuals who met or exceed the suggested cut-off on the SIAS but not the GAD-Q-IV, while the GAD analogue group consisted of individuals who met or exceed the suggested cut-off on the GAD-Q-IV but not the SIAS. Finally, the control group was comprised of all participants who did not meet or exceed the established cut-offs for either of these measures. Individuals who met criteria for both groups were excluded from analyses or ES participation.

Participant recruitment. Participants from the initial survey sample who met the aforementioned selection criteria, indicated interest in future research opportunities, and provided valid contact information were actively recruited for participation in the ES portion of the project. Recruitment was continuous between the Spring semester 2007 through the Spring semester 2008.

Participants who met selection criteria were solicited via electronic mail from a dedicated account. Second and third e-mail prompts were sent to individuals who did not respond to previous prompts within approximately one week. Participants belonging to underrepresented groups (e.g., males, SP analogue group) were commonly also contacted via telephone to draw attention to the email solicitation. See Appendix C for templates of these solicitations.

Participant training. In accordance with the recommendations of Conner-Christensen, Feldman-Barrett, Bliss-Moreau, Lebo, and Kaschub (2003) for conducting ES research, interested participants attended an informational training session (approximately 50 minutes in duration). Training sessions were held in Burnett Hall on the UNL main campus. The purpose of these sessions was to familiarize participants with the study and its procedures, particularly the use of PDA devices. Trained research assistants conducted a total of 42 training sessions held regularly throughout the data collection period. Informed consent forms were distributed to all participants at the training session. Those under the age of 19 were required to provide a completed parental consent form in order to continue. Participant training materials can be found in Appendix D.

In order to account for individual differences in sleep-wake schedules, participants were allowed to select a 14-hour period of the day from which they wanted the device to sample (e.g., 8:00 a.m. to 10:00 p.m.). If desired, separate periods were allowed for weekdays and weekends. At the end of the training, participants were each assigned an individually programmed PDA. The program was initiated immediately upon completion of the training session.

Participants were provided with a take-home information packet to consult for questions. They were also provided with the researchers' contact information in the case that they had a problem with their device. To minimize any confusions and resulting data loss, the researchers responded to participants' questions in a prompt manner. Several participants did experience technical malfunctions, in which case they typically agreed to complete additional ES data collection.

Experience-sampling parameters. PDA devices were carried by participants for 168 continuous hours over the course eight days (initiated immediately following training, followed by six full days, and ending with a final partial day). Using the alarm feature, PDAs were programmed to request signal-contingent input from participants on eight occasions per day (56 total

samplings). These parameters are typical of successful ESM studies (for a review see Connor-Christensen, 2003; for an example see Brown, Silva, Myin-Germeys, & Kwapil, 2007), in that participants were sampled with enough frequency and over a long enough period to capture meaningful variability, without inducing high rates of attrition or undue burden.

PDA devices remained in a locked state of hibernation between signals (i.e., were not be useable for other purposes). As previously mentioned, participants had selected a 14-hour period of the day during which the device would be active. Technically, the program divided each daily 14-hour window into equal periods (seven 1.75-hour segments) and then signaled for input at one random time within each segment. The program does not allow the setting a minimum amount of time between signals. Therefore, it was possible (although highly improbable) for signals to occur very close together. All responses were electronically marked with the exact date and time.

Participants were asked to carry the device on their person at all times, but were not asked to change or otherwise modify their routines in any way. From a theoretical perspective, it is most advantageous to have participants respond immediately to a signal to prevent

gathering retrospective (rather than momentary) responses. However, for practical purposes, it has been found to be necessary to allow participants a brief delay in responding in the case they are not in an appropriate situation to do so (e.g., driving).

Hormuth (1986) found that on average, 50% of signals were responded to immediately, and 80% within five minutes. Therefore, participants in the current study were allowed a five-minute window to respond to the signal before the device returned to hibernation. Further, following a review of the ESM literature and pilot testing, it was concluded that any response faster than one second was likely a sign of participant error (e.g., inadvertently tapping the screen twice for the previous item) or non-compliance (e.g., quickly answering items without reading them). Such responses were considered invalid and treated as missing.

Finally, all items were presented at every signal in random order. As previously mentioned, the only exception to this was the attention/awareness items, which were always presented first. Again, see Appendix A for a list of ES items.

Remuneration. Following the recommendation of Conner-Christensen et al. (2003), a complex remuneration structure

comprised of multiple incentives was implemented to maximize participant responding. Participants received up to $45 for participation in the ES portion of the study. To encourage continued participation for the entire data collection period, individuals earned increasing rewards for each successive day of participation. Specifically, they earned $2 for day 1, $3 for day 2, $4 for day 3, $5 for day 4, $6 for day 5, $7 for day 6, and $8 for day 7 ($35 total). "Participation" for a given day was defined as successfully responding to at least half (i.e., 4 out of 8) of the signals that day.

Individuals who responded to fewer than 50% of the signals did not earn payment for that day. Additionally, to encourage frequent responding across days, participants earned an additional $10 bonus if they responded to 80% or greater of the total number of signals (i.e., 44 out of 56). Participants generally received compensation within three weeks following return of the device. Analyses revealed that participants earned a mean of $36.91 (out of a $45 maximum). Table 5 below displays summaries of remuneration rates and participants' preferred ES parameters.

Table 5. Mean of experience-sampling parameter preferences
and compensation.

	Total	Group		
		SP	GAD	Control
Start				
Weekdays	9:00	9:00	8:45	9:00
Weekends	9:30	9:30	9:30	9:30
End				
Weekdays	23:00	23:00	22:45	23:00
Weekends	23:30	23:30	23:30	23:30
Payment($)	36.91	39.84	37.83	35.05

Note. SP = social phobia analogue group; GAD = generalized
anxiety disorder analogue group. All times are according
24-hour clock. Exactly 14-hours were required between
preferred start and stop times. Due to programming
constraints, the latest stop time allowed was 23:59.
Maximum compensation was $45.

Return of PDA devices. Participants were held

accountable for maintaining the working condition of their

assigned PDA device and returning it promptly following

completion of the data collection (see Appendix D for a

copy of the research equipment contract). Research

assistants obtained a photocopy of participants' student

identification card to assure further accountability.

Participants did not receive compensation if the device was

damaged, reported lost, or not returned.

Participants who did not return the device within

approximately one week following the end of the data

collection period were first prompted via phone and email.

If the device was still not returned within several weeks,

participants were then sent a brief letter prompting them

to do so. Finally, if the device is still not returned or
otherwise accounted for, the participant's name, contact
information, and student ID photocopy was turned over to
the UNL Campus Police to assist in recovery. This final
step was required on one occasion over the course of the
study.

Debriefing. Debriefing forms were mailed to
participants following return of the device. Debriefing
forms informed participants about the main purposes of the
study, why they were specifically recruited, and provided
appropriate clinical referral information.

Data cleaning. Univariate data were checked for data
entry errors or values outside of the possible range. Data
points outside the possible range were corrected for errors
or deleted. Given that initial self-report measures were
administered, in part, for the purposes of selecting
outliers on particular measures, and that ES items provide
respondents with a restricted range of response options,
outlier analyses were not conducted. Individuals who did
not provide complete data on the two measures used to
create the analogue groups (i.e., SIAS and GAD-Q-IV),
making their group membership indeterminable, were deleted
from the dataset and were not recruited for ES procedures.

As previously discussed, ES responses less than one second were considered reflective of participant error or non-compliance. Application of this criterion resulted in the deletion of a total of 3,181 (1.7%) responses. Of note, no participants demonstrated invariant responding (e.g., repeatedly providing the same response).

Missing data. The given the nature of ESM designs, high rates of missing data can be an issue of concern. Connor-Christensen et al. (2003) estimated that response rates for ESM studies with similar parameters to those of the current study have an average around 70%. Because the constructs of interest were represented by group means comprised of numerous responses aggregated within and across individuals, even moderate rates of missing data were not expected to have a significant impact on the results. A summary of ES responding can be found below, while summary frequencies of ES items can found in Appendix E.

Data aggregation. ES data have a hierarchical structure. Data analysis techniques within the Multi-Level Modeling (MLM) framework, such as Hierarchical Linear Modeling (HLM), are well-suited and commonly used for this type of data in which repeated observations ("signal-level")

are nested within persons ("subject-level") (Schwartz &

Stone, 1998). A primary advantage of MLM analysis is its

ability to model change over time, using the average initial

status (intercept) and the average rate of change (slope).

For the current study, however, none of the hypotheses

involved specific predictions about change over time, but

rather speculated about overall group differences.

Therefore, although such modeling will likely be useful for

future use of this data, the outcome of extensive

statistical consultation confirmed that aggregating the data

and performing more traditional analyses would be

appropriate.

One option when aggregating longitudinal data is to

aggregate at the signal-level such that each individual

response is treated as a unique data point. One advantage

of this approach is that statistical power is maximized.

However, several related criticisms have been leveled

against this approach, including sample size inflation and

that equal weight is given to all reports. In other words,

with this approach, multiple reports from the same

individual contribute to the group mean (e.g., 896 reports

from only 48 participants), violating the assumption of

independence of data points (especially if reports are

relatively close together). Moreover, participants may

demonstrate differential rates of responding to a signal in a manner related to the construct being measured (see Csikszentmihalyi & Larsen, 1987), possibly confounding group comparisons (e.g., one group being less likely to respond to a signal due to commonly being more anxious; see Larsen, 1989).

An alternative approach that carries less risk of violating statistical assumptions is to aggregate data at the subject-level, which involves first computing aggregate scores for each participant and then utilizing these means to compute the group means (Csikszentmihalyi & Larsen, 1987). This approach is more conservative in that it limits statistical power such that each participant contributes only one data point to the group mean. Despite the bias towards false negatives (Type II error) inherent to subject-level aggregation, this approach was used here so as to avoid the problems inherent to signal-level aggregation.

Data analyses. Primary statistical analyses involved one-way between-group analysis of variance (ANOVA) tests. In circumstances in which resulting omnibus F-statistics were significant, follow-up pairwise comparison analyses were performed to reveal the pattern of group differences. Given the large number of group comparisons being

performed, follow-up analyses utilized Bonferroni

correction to control for the potential for false positives

(Type I error) that comes with making a large number of

comparisons. Finally, Cohen's *d* statistic was calculated

for particular results of interest to provide a

standardized reflection of the size of the effect.

Results

Preliminary Analyses

Testing for the presence of selection bias. Only participants who agreed to be contacted regarding future research opportunities (as part of the initial survey data collection) had the potential to provide ES data. As such, it is possible that individuals who agreed to participate may have differed meaningfully from those who declined with regard to constructs of interest. The presence of such a bias which would call into question the representativeness of the sample. Therefore, for those who qualified for group membership, a series of one-way between-group ANOVA tests were performed between those who provided and did not provide valid ES data. Recall that it was previously established (see *Participants* section above) that ES and Non-ES participants did not differ with regard to demographic variables.

Descriptive statistics of self-report measures by group and ES participation status are displayed in Table 6 below. Results of group comparisons revealed only one significant result. Namely, for individuals in the GAD analogue group, ES participants scored significantly lower ($M = 11.38$, $SD = 4.95$) than non-ES participants ($M = 14.27$,

SD = 5.77) on the DERS-Nonacceptance subscale [F(1,105) =

5.63, *p* = .02].   In other words, individuals who qualified

for the analogue GAD group who provided ES data reported

significantly less difficulty generally accepting their

emotions than those who did not provide ES data.   This

exception aside, results overwhelmingly indicate that those

who provided ES data were not meaningfully different from

those who did not on constructs of interest, suggesting the

absence of a selection bias.

Table 6. Mean (standard deviation) of self-report measures by participation status.

Measure	SP		GAD		Control	
	ES [N=18-19]	Non-ES [N=59-61]	ES [N=22-23]	Non-ES [N=83-85]	ES [N=37-40]	Non-ES [N=464-486]
SIAS	40.37 (4.94)	40.87 (7.41)	20.39 (5.81)	19.61 (8.22)	15.48 (7.33)	16.64 (8.09)
SPDQ	3.78 (1.73)	3.25 (1.69)	7.18 (4.32)	8.31 (3.50)	4.99 (3.60)	5.74 (3.27)
GAD-Q-IV	12.76 (3.46)	13.07 (3.56)	8.57 (1.97)	8.85 (1.72)	1.61 (1.36)	2.00 (1.56)
PSWQ	56.28 (10.45)	51.65 (10.94)	62.30 (9.67)	62.22 (10.11)	42.21 (12.01)	41.13 (11.82)
BDI-II	17.09 (10.89)	14.71 (8.52)	14.22 (7.86)	15.27 (9.25)	8.30 (5.83)	8.15 (6.32)
PANAS						
NA	23.32 (5.80)	22.64 (5.52)	22.43 (6.16)	23.40 (8.12)	16.93 (5.17)	16.80 (4.95)
PA	26.95 (7.61)	27.42 (6.21)	27.91 (6.50)	30.56 (6.54)	31.93 (7.35)	33.04 (6.96)
ERQ						
Suppression	16.95 (4.92)	15.79 (5.34)	13.65 (4.96)	12.49 (5.40)	11.83 (4.42)	12.42 (4.90)
Reappraisal	27.53 (4.86)	25.56 (6.16)	26.00 (4.64)	26.88 (5.74)	27.25 (7.24)	28.78 (5.93)
DERS	98.26 (15.20)	91.42 (16.91)	82.30 (19.91)	91.65 (21.86)	72.38 (19.98)	73.84 (17.81)
Clarity	14.02 (4.00)	13.46 (4.19)	11.43 (3.51)	12.17 (3.93)	10.23 (4.07)	10.20 (3.19)
Awareness	18.63 (4.66)	16.22 (4.93)	14.30 (4.34)	14.42 (4.02)	14.23 (4.46)	14.72 (4.30)
Acceptance	15.37 (5.13)	14.45 (4.52)	11.30 (3.05)	14.27 (5.77)	11.38 (4.93)	10.93 (4.59)
Strategies	20.00 (4.70)	18.92 (6.26)	18.17 (6.93)	20.57 (7.26)	13.88 (5.56)	14.05 (5.24)
Goals	17.74 (3.46)	16.37 (4.91)	15.43 (4.92)	17.58 (5.23)	13.33 (4.86)	14.21 (4.56)
Impulse	12.42 (3.29)	11.00 (3.93)	11.65 (5.62)	12.90 (4.72)	9.35 (3.64)	9.71 (3.61)

Note. ES = experience-sampling; *M* = mean; *SD* = standard deviation; SP = social phobia analogue group; GAD = generalized anxiety disorder analogue group. *N*'s vary due to missing data.

Partial Replication of Turk et al. (2005). Table 7 below displays descriptive statistics for the self-report measures in the full initial survey sample, for those who qualified for group membership only, and the results of between-group comparisons.

Table 7. Means (standard deviation) of self-report measures and results of comparisons by group membership.

Measure	Total	Group			F
		SP	GAD	Control	
SIAS	19.75	40.87[a]	19.74[b]	16.57[c]	^295.61***
	(7.75)	(6.88)	(7.78)	(8.02)	
SPDQ	6.88	13.12[a]	8.05[b]	5.69[c]	155.44***
	(4.11)	(3.52)	(3.76)	(3.31)	
GAD-Q-IV	3.18	3.53[a]	8.79[b]	2.01[c]	^698.29***
	(2.94)	(2.02)	(1.75)	(1.57)	
PSWQ	46.35	53.10[a]	61.97[b]	42.53[c]	127.41***
	(13.79)	(10.92)	(10.15)	(12.01)	
BDI-II	10.04	15.24[a]	14.90[a]	8.29[b]	62.01***
	(7.44)	(9.09)	(9.03)	(5.85)	
PANAS					
NA	18.44	22.80[a]	23.37[a]	16.85[b]	83.10***
	(6.16)	(5.52)	(7.83)	(4.88)	
PA	31.88	27.72[a]	30.02[a]	32.94[b]	22.84***
	(7.13)	(6.28)	(6.53)	(6.95)	
ERQ					
Suppression	12.85	15.46[a]	12.88[b]	12.39[b]	12.02***
	(5.10)	(5.14)	(5.12)	(4.86)	
Reappraisal	28.07	26.00[a]	26.71[a]	28.77[b]	10.44***
	(6.03)	(6.03)	(5.34)	(5.95)	
DERS	78.28	91.99[a]	89.80[a]	74.00[b]	52.04***
	(19.96)	(16.22)	(21.79)	(18.01)	31.61***
Clarity	10.86	13.39[a]	12.06[b]	10.28[c]	
	(3.65)	(3.96)	(3.88)	(3.31)	
Awareness	14.87	16.65[a]	14.53[b]	14.69[b]	6.61**
	(4.40)	(4.98)	(3.96)	(4.34)	
Acceptance	11.78	14.61[a]	13.53[a]	10.99[b]	26.42***
	(4.94)	(4.62)	(5.32)	(4.59)	
Strategies	15.60	19.58[a]	19.99[a]	14.10[b]	65.02***
	(6.24)	(5.52)	(7.23)	(5.28)	
Goals	14.88	16.51[a]	17.07[a]	14.22[b]	20.09***
	(4.84)	(4.46)	(5.19)	(4.58)	
Impulse	10.31	11.25[a]	12.63[a]	9.72[b]	25.56***
	(4.01)	(3.79)	(4.94)	(3.64)	

Note. SP = social phobia analogue group; GAD = generalized anxiety disorder analogue group. Sample sizes vary due to missing data: full sample = 683-714; control group = 491-527; SP = 71-79; GAD = 99-108. Values with different superscripts represent significant group differences at post-hoc follow-up with Bonferroni correction.
***p < .001, **p < .01, *p < .05

Differences on these measures across gender may influence the interpretation of group differences. Therefore, a series of between-group ANOVAs were performed comparing men and women who qualified for group membership on self-report measures. No significant differences emerged for the SPDQ, BDI-II, PANAS-PA, DERS-Total, or the Clarity, Impulse, Strategies, and Nonacceptance subscales of the DERS. However, relative to men, women scored higher on the PSWQ, GAD-Q-IV, PANAS-NA, and DERS-Goals. Men scored higher than women on the SIAS, DERS-Nonawareness, and ERQ-Suppression. Given the presence of these differences, for these specific variables, a series of 3 (group: SP, GAD, control) x 2 (sex: women, men) ANOVAs were performed. No significant interactions were found. Therefore, remaining analyses with questionnaire data collapse across sex.

Results of statistical comparisons indicated the existence of significant group differences for all cross-sectional self-report measures (all omnibus tests revealed p-values < .01). Follow-up comparisons revealed that the control group differed significantly from the clinical analogue groups on nearly all scales. That is, the control group reported less social anxiety, worry, depression, and negative affectivity, greater positive affectivity and use

of cognitive reappraisal, and fewer difficulties with emotion regulation when compared to the clinical analogue groups. The two exceptions to this pattern were that the control group did not differ from the GAD analogue group on the ERQ-Suppression and DERS-Nonawareness subscales. In other words, control participants did not differ from analogue GAD participants with regard to expressive suppression of emotion or level of emotional awareness.

Given that groups were created using the SIAS and GAD-Q-IV, it was of course expected that the groups would differ with regard to these measures. Indeed, the SP analogue group demonstrated significantly higher scores than all other groups on the SIAS, a symptom measure of social anxiety in social interaction situations, while the GAD analogue group demonstrated significantly higher scores than all other groups on the GAD-Q-IV, a self-report diagnostic measure of generalized anxiety disorder. Providing additional confidence in the validity of groupings, the SP analogue group scored higher on the SPDQ, a self-report diagnostic measure of SP, than all other groups. Further, the GAD analogue group scored higher than other groups on the PSWQ, a measure of pathological worry.

The clinical analogue groups did not differ from each other with regard to the BDI-II, PANAS scales, ERQ-

Reappraisal, and most subscales of the DERS (as well as its total score). Of note, however, the SP analogue group did score significantly higher than all other groups on ERQ-Suppression, DERS-Clarity, and DERS-Nonawareness subscales. Put another way, individuals selected to represent the two clinical analogue groups did not differ with regard to reported symptoms of depression, the propensity to experience positive or negative emotional states, or many common difficulties with emotion regulation. Important exceptions to this pattern were that the SP analogue group, when compared with the GAD analogue group, reported greater suppression of the expression of emotions, poorer emotional clarity, and less awareness of emotions.

Summary of ES responding. Appendix E displays a summary of responding to ES signaling for each item for the full sample and by group. Recall that PDAs were programmed to signal 56 times over the course of the study, each time asking participants to respond to 51 items, resulting in a maximum total of 2,856 items presented to each participant. Recall also that cleaning procedures were implemented to remove responses that were missed, ignored, or too fast to be considered valid (i.e., less than 1 second).

Results indicate that participants completed a total of 174,835 valid item responses (averaging approximately

2,132 per participant) over 4,592 signals (averaging

approximately 42 valid signals per participant), resulting

in a mean signal-to-response rate of 74.7%. These results

are comparable to other published ESM work with emotional

constructs. For example, in a similar ESM study, Brown et

al. (2007) reported a response rate of 73.2%. The

frequency of valid responses varied minimally as a function

of item (range = 40.32 - 41.99 per participant) or group

(SP = 42.36; GAD = 40.70; control = 42.63).

As previously mentioned, the majority of the

constructs of interest in this study have never been

examined using ES techniques. Although the ES items used

here were modeled after established measures, several

factors (e.g., modification to accommodate a "state"

timeframe, repeated application) suggest that their

validity should not be assumed. Therefore, to provide some

data regarding the validity of these constructs assessed

via ES, correlations were calculated between the

traditional survey and ES assessment of each construct.

Results are displayed in Appendix E, with bolded values

representing correlations between conceptually equivalent

constructs.

Absolute correlations between the same constructs

assessed via the two methods ranged from non-significant (r

= .02; *p* > .10) to medium (*r* = .43; *p* < .001) in magnitude.

Because of the questionable validity of several of these

constructs, further analyses were performed at both the

item and scale-level and should be interpreted with

caution. Appendix E includes the full correlation matrix

of ES constructs.

Finally, despite efforts to achieve an equal gender

distribution, the final ES sample included a relatively

small number of male participants (*n* = 17; 3 SP, 3 GAD, and

11 control). This small sample size precluded the

statistical examination of gender differences for ES data.

Primary Analyses

Social anxiety. Descriptive statistics and results of

group comparisons with regard to social anxiety assessed

via ES are presented in Table 8 below.

Table 8. Mean (standard deviation) for social anxiety and constituent items assessed via experience-sampling with group comparisons.

| Item | Total | Group | | | F |
		SP	GAD	Control	
39	18.59	27.81[a]	16.92[b]	15.16[b]	5.81**
Worried	(14.39)	(20.16)	(11.34)	(10.72)	
40	17.03	26.24[a]	14.40[b]	14.18[b]	5.27**
Notice	(14.81)	(21.56)	(10.13)	(11.39)	
41	17.15	25.63[a]	15.06[b]	14.33[b]	4.70*
Approve	(14.39)	(20.54)	(10.47)	(11.30)	
42	18.67	26.65[a]	15.38[b]	16.76[a,b]	3.67*
Say/Do	(15.27)	(20.90)	(11.70)	(12.83)	
43	16.55	23.12[a]	15.51[a,b]	14.03[b]	4.00*
Interact	(12.14)	(13.59)	(9.94)	(11.72)	
44	13.24	16.79	12.82	11.79	1.52
Embarrassed	(10.46)	(12.55)	(9.62)	(9.70)	
(Total)	16.87	24.37[a]	15.02[b]	14.37[b]	4.69*
	(12.76)	(17.08)	(10.06)	(10.51)	

Note. 0-100 scale. M = mean; SD = standard deviation; F = omnibus ANOVA statistic. Values with different superscript letters represent significant group differences at post-hoc follow-up with Bonferroni correction.
***p < .001, **p < .01, *p < .05.

On a 0-100 scale, participants gave a mean rating for state social anxiety symptoms of 16.87 (SD = 12.76). The patterns of group differences were largely consistent with expectations. Namely, groups differed significantly with regard to total social anxiety [$F(2,79)$ = 4.69, p = .01] such that the SP analogue group reported greater overall social anxiety symptoms (M = 24.38, SD = 17.08) than the GAD analogue (M = 15.02, SD = 10.06; p < .05, d = .60) or control (M = 14.37, SD = 10.01; p = .01, d = .82) groups, which did not differ significantly from each other. This pattern was predominant at the item level, with the

exception of item 44 ("I am currently feeling

EMBARRASSED"), for which the aforementioned trend did not

reach statistical significance [$F(2,79) = 1.52$, $p = .23$].

   Social avoidance. Descriptive statistics and results

of group comparisons with regard to social avoidance

assessed via ES are presented in Table 9 below.

Table 9. Percentages for social situation item and mean
(standard deviation) for social avoidance item assessed via
experience-sampling with group comparisons.

Item	Total	Group			F
		SP	GAD	Control	
8 Situation Type					
Alone	36.10%	36.41%	35.84%	39.10%	0.01
Roommates/	39.51%	39.82%	34.18%	42.42%	1.19
Friends					
Family	11.07%	10.71%	15.93%	8.45%	2.13
Professionals	4.01%	3.58%	3.49%	4.51%	0.31
Strangers	11.07%	12.91%	10.96%	11.55%	0.16
(Total)	106.11%	111.12%[a]	102.89%[b]	109.7%[a]	3.73*
38 Avoidance	14.90	22.32[a]	13.30[a,b]	12.30[b]	4.60*
	(12.77)	(15.86)	(11.83)	(10.42)	

Note. F = omnibus ANOVA statistic; SP = social phobia
analogue group; GAD = generalized anxiety disorder analogue
group. Values with different superscript letters represent
significant group differences at post-hoc follow-up with
Bonferroni correction. Columns sum to greater than 100%
due to some participants selecting more than one answer
(contrary to instruction).
***$p < .001$, **$p < .01$, *$p < .05$, ^$p < .10$.

   Of the options provided for item 8 ["WHO is with you

(Check the ONE that BEST describes")?], participants most

frequently indicated being with "roommates/friends"

(39.5%), and least frequently indicated being in the

company of "professionals" (e.g., teachers, doctors; 4.1%).

Between-group ANOVA comparisons of percentages indicated

that groups did not differ significantly with regard to

reports of the nature of their current social situation.

Contrary to expectations then, the SP analogue group did

not report being alone more frequently than other groups.

Of note, the response option "other" did trend towards

significance [$F(2,79) = 2.53$, $p = .09$] such that members of

the SP analogue group more frequently selected this option

(7.69%) than did the GAD analogue (2.76%) or control

(3.68%) groups. In other words, the SP analogue group,

more so than other groups, felt that the provided response

options did not accurately describe the nature of their

current social situation. Also of note, a minority of

participants did not follow the directions and provided

more than one answer for this item (see Totals greater than

100% in Table 9 above). There were significant group

differences with regard to this behavior [$F(2,79) = 3.73$, p

$= .03$] such that the GAD analogue group demonstrated

significantly fewer additional responses compared to other

groups.

Regarding item 38 ("I am currently AVOIDING a SOCIAL

SITUATION"), participants (on a 0-100 scale) provided a mean

rating of 14.90 ($SD = 12.77$). Results of statistical

comparisons indicated that groups differed significantly with regard to this item [$F(2,79)$ = 4.60, p = .01]. Consistent with hypotheses, the SP analogue group reported greater state social avoidance (M = 22.32, SD = 15.86) than the control group (M = 12.30, SD = 10.42; p = .01, d = .82). However, inconsistent with expectations, the SP analogue group only trended toward more reported social avoidance when compared to the GAD analogue group (M = 13.30, SD = 11.83; p = .06). The GAD analogue and control groups did not differ significantly with regard to this variable.

In summary, consistent with common conceptualizations of SP, the individuals selected to represent an analogue SP group generally reported greater state social anxiety symptoms and social avoidance when sampled in their daily lives. However, inconsistent with predominant assumptions about this disorder, these individuals did not report greater experience of the specific emotion of embarrassment nor did they report more often being alone.

Table 10. Mean (standard deviation) for generalized anxiety symptoms and constituent items assessed via experience-sampling with group comparisons.

| Item | Total | Group | | | F |
		SP	GAD	Control	
45 Keyed-Up	25.27 (16.02)	29.25 (19.69)	25.15 (14.06)	23.46 (15.22)	0.84
46 Concentration	31.74 (16.06)	37.18 (22.06)	31.51 (11.93)	29.29 (14.50)	1.58
47 Tension	26.17 (18.64)	25.52 (19.46)	30.09 (19.56)	24.22 (17.84)	0.74
48 Fatigued	41.26 (20.74)	48.09 (22.75)	37.91 (16.37)	39.94 (21.72)	1.53
49 Irritable	28.80 (14.40)	33.29 (18.35)	30.11 (10.37)	25.91 (13.97)	1.86
50 Worried	29.47 (15.81)	37.90^{a} (18.77)	$29.00^{a,b}$ (11.64)	25.73^{b} (15.20)	4.12*
51 Controlling	21.31 (14.20)	29.75^{a} (18.74)	$19.52^{a,b}$ (8.41)	18.32^{b} (13.07)	4.84*
(Total)	29.14 (13.09)	34.42 (17.32)	29.04 (9.20)	26.70 (12.24)	2.32

Note. 0-100 scale. M = mean; SD = standard deviation; F = omnibus ANOVA statistic; SP = social phobia analogue group; GAD = generalized anxiety disorder analogue group. Values with different superscript letters represent significant group differences at post-hoc follow-up with Bonferroni correction.
***p < .001, **p < .01, *p < .05.

On a 0-100 scale, participants indicated an average state level of generalized anxiety symptoms of 29.14 (SD = 13.09). Contrary to expectations, the groups did not differ significantly on the total GAD symptom index [$F(2,79)$ = 2.32, p = .11]. At the item-level, significant group differences were revealed for only two of the seven items. Specifically, there were significant group differences for item 50 ("I am currently feeling WORRIED") [$F(2,79)$ = 4.12, p = .02] such that the SP analogue group

(*M* = 37.90, *SD* = 18.77) was statistically equivalent to the GAD analogue group (*M* = 29.00, *SD* = 11.64, *p* = .19), but significantly higher than the control group (*M* = 25.73, *SD* = 15.20; *p* = .02, d = .80). The two latter groups did not differ significantly on this item.

An identical pattern of group differences was revealed for item 51 ("I am currently having DIFFICULTY CONTROLLLING any WORRY I may be feeling") [*F*(2,79) = 4.84, *p* = .01]. Namely, the SP analogue group gave statistically equivalent mean ratings for this item (*M* = 29.75, *SD* = 18.74) when compared to the GAD analogue group (*M* = 19.52, *SD* = 8.41; *p* = .05), but significantly higher mean ratings when compared to the control group (*M* = 18.32, *SD* = 13.07; *p* = .01, *d* = .84). Finally, the two latter groups did not differ significantly.

In summary, contrary to expectations based upon predominant conceptualization of GAD, individuals selected to represent an analogue GAD patient group did not provide higher state ratings of symptoms commonly associated with this disorder when compared to other groups. Unexpectedly, the only group differences that emerged were that individuals with analogue SP provided higher state ratings for worry and worry uncontrollability compared to the non-anxious control group.

Intensity of emotional experience. Descriptive statistics and results of group comparisons with regard to the valence and intensity of emotional experience assessed via ES are presented in Table 11 below.

Table 11. Mean (standard deviation) for emotional intensity and constituent items assessed via experience-sampling with group comparisons.

Item	Total	Group SP	GAD	Control	F
Positive					
15	50.95	53.10	52.83	48.84	0.89
Relaxed	(13.97)	(14.52)	(16.22)	(12.29)	
16	29.91	29.91	29.08	30.39	0.04
Proud	(17.87)	(21.23)	(15.82)	(17.71)	
17	38.78	37.66	40.13	38.54	0.14
Excited	(15.33)	(18.86)	(16.48)	(13.01)	
18	40.85	38.48	41.72	41.48	0.19
Appreciative	(19.22)	(22.24)	(17.64)	(18.96)	
19	36.04	36.71	38.80	34.14	0.65
Enthusiastic	(15.80)	(19.62)	(16.80)	(13.16)	
20	51.80	48.89	51.35	53.44	0.53
Happy	(15.94)	(18.87)	(17.40)	(13.62)	
21	40.20	38.64	41.19	40.36	0.12
Joy	(16.94)	(19.09)	(17.66)	(15.81)	
22	33.44	37.24	33.92	31.36	0.88
Amused	(16.07)	(18.18)	(17.05)	(14.42)	
(Total)	40.25	40.08	41.13	39.82	0.07
	(13.69)	(17.27)	(14.02)	(11.84)	
Negative					
10	37.95	43.53	35.31	36.81	1.07
Sluggish	(19.41)	(23.35)	(15.61)	(19.31)	
11	14.91	16.85	14.19	14.39	0.28
Sad	(12.86)	(13.10)	(12.46)	(13.21)	
12	18.27	20.84	16.58	18.00	0.51
Afraid	(13.72)	(12.97)	(10.28)	(15.78)	
13	17.11	19.00	16.22	16.73	0.40
Angry	(10.59)	(11.84)	(8.76)	(11.07)	
14	33.66	34.86	32.15	29.99	0.71
Anxious	(14.20)	(18.97)	(16.20)	(16.00)	
23	23.64	28.62	24.45	22.94	0.87
Nervous	(14.29)	(19.40)	(15.81)	(14.80)	
24	16.49	18.48	16.10	15.77	0.36
Guilty	(11.71)	(11.64)	(10.09)	(12.74)	
25	14.64	16.65	13.94	14.09	0.40
Ashamed	(11.08)	(11.70)	(9.34)	(11.83)	
(Total)	22.00	24.85	21.21	21.09	0.83
	(11.02)	(12.11)	(8.45)	(11.80)	

Note. 0-100 scale. *M* = mean; *SD* = standard deviation; *F* = omnibus ANOVA statistic; SP = social phobia analogue group; GAD = generalized anxiety disorder analogue group. Values with different superscript letters represent significant group differences at post-hoc follow-up with Bonferroni correction. ****p* < .001, ***p* < .01, **p* < .05.

On a 0-100 scale, participants averaged a rating of 40.25 (*SD* = 13.69) for state positive emotion items and an average rating of 22.00 (*SD* = 11.02) for state negative emotion items. Contrary to hypotheses that the SP analogue group would report less state positive emotion and that the GAD analogue group would report greater state negative emotion than other groups, results indicate that groups did not differ significantly at either the scale or item-level (all *p*-values > .35). In sum, these results suggest that the intensity of moment-to-moment positive and negative emotion did not vary significantly across groups.

Emotional expression. Descriptive statistics and results of group comparisons with regard to state emotional expression assessed via ES are presented in Table 12 below.

Table 12. Mean (standard deviation) for emotional expression items assessed via experience-sampling with group comparisons.

Item	Total	Group			*F*
		SP	GAD	Control	
Positive 53	41.13 (16.86)	42.04 (21.06)	39.57 (16.97)	41.59 (14.87)	0.14
Negative 54	20.05 (11.63)	23.30 (12.87)	17.99 (11.24)	19.70 (11.19)	1.12

Note. 0-100 scale. *M* = mean; *SD* = standard deviation; *F* = omnibus ANOVA statistic; SP = social phobia analogue group; GAD = generalized anxiety disorder analogue group.
***p* < .001, **p* < .01, *p* < .05.

On a 0-100 scale, participants rated their average state expression of positive emotion as 41.13 (SD = 16.86) and 20.05 (SD = 11.63) for negative emotion. Results of statistical comparisons indicated that groups did not differ significantly with regard to their state expression of positive [$F(2,79)$ = 0.14, p = .87] or negative [$F(2,79)$ = 1.12, p = .33] emotion. These results fail to lend support to the hypotheses that, relative to other groups, the SP analogue group would report less expression of positive emotion or that the GAD analogue group would report greater expression of negative emotion.

Emotional clarity. Descriptive statistics and results of group comparisons with regard to emotional clarity assessed via ES are presented in Table 13 below.

Table 13. Mean (standard deviation) for emotional clarity and constituent items assessed via experience-sampling with group comparisons.

| Item | Total | Group | | | F |
		SP	GAD	Control	
Positive					
32[#]	80.89	74.03[a]	81.65[a,b]	83.69[b]	3.32*
Sense	(13.94)	(19.87)	(10.98)	(11.04)	
35[#]	82.70	75.45[a]	83.45[a,b]	85.72[b]	4.04*
Confused	(13.54)	(18.59)	(10.77)	(10.98)	
36	68.98	63.33	69.82	71.17	1.68
Clear	(15.71)	(18.15)	(14.66)	(14.77)	
(Total)	77.52	70.94[a]	78.31[a,b]	80.20[b]	3.66*
	(12.79)	(16.37)	(11.06)	(10.87)	
Negative					
33[#]	79.98	72.00[a]	81.59[a,b]	82.85[b]	4.00*
Sense	(14.65)	(20.75)	(10.27)	(12.11)	
34[#]	81.05	74.02[a]	82.40[a,b]	83.61[b]	3.21*
Confused	(14.28)	(19.29)	(10.08)	(12.76)	
37	61.92	54.85	62.05	65.21	2.15
Clear	(18.17)	(19.03)	(16.91)	(17.95)	
(Total)	74.32	66.96[a]	75.35[a,b]	77.22[b]	3.73*
	(14.11)	(17.47)	(11.02)	(12.97)	

Note. # = reverse scored items. F = omnibus ANOVA statistic; SP = social phobia analogue group; GAD = generalized anxiety disorder analogue group. Values with different superscript letters represent significant group differences at post-hoc follow-up with Bonferroni correction.
***p < .001, **p < .01, *p < .05.

On a 0-100 scale, participants averaged a rating of

77.52 (SD = 12.79) for clarity of positive emotion items.

Groups differed significantly with regard to this index

[$F(2,79)$ = 3.66, p = .03], such that the SP analogue group

reported significantly less state positive emotional

clarity (M = 70.94, SD = 16.37) than the control group (M =

80.20, SD = 10.87; p = .03, d = .75), while the GAD

analogue group (M = 78.31, SD = 11.06) did not differ

significantly from either group. This pattern was consistent at the item-level with the exception of the one reverse-keyed item (item 36; "I am CLEAR about what POSITIVE emotions or feelings I am currently experiencing"), which did not differ between groups [$F(2,79) = 1.68$, $p = .19$].

With regard to the clarity negative emotion, participants averaged a rating of 74.32 ($SD = 14.11$). The pattern of group differences was the same as for positive emotion [$F(2.79) = 3.73$, $p = .03$]. Namely, the SP analogue group reported significantly less state negative emotional clarity ($M = 66.96$, $SD = 17.47$) than the control group ($M = 77.22$, $SD = 12.97$; $p = .03$, $d = .75$,), while the GAD analogue group ($M = 75.35$, $SD = 11.02$) did not differ significantly from either group. The pattern of group differences was the same at the item level with the exception of the one reverse-keyed item (item 37; "I am CLEAR about what NEGATIVE emotions or feelings I am currently experiencing"), for which groups did not differ [$F(2,79) = 2.15$, $p = .12$].

In sum, results with regard to emotional clarity provided mixed support for hypothesized group differences. As anticipated, the SP analogue group did report less clarity of positive emotions than the control group, but

differences with the GAD analogue group, while seemingly

apparent, failed to reach statistical significance.

Inconsistent with expectations, the GAD analogue group did

not report less clarity of negative emotions compared to

other groups. Rather, the SP analogue group trended

towards less clarity of negative emotions compared to the

control group, but again, differences from the GAD analogue

group failed to reach statistical significance.

Emotional acceptance. Descriptive statistics and

results of group comparisons with regard to emotional

acceptance assessed via ES are presented in Table 14 below.

Table 14. Mean (standard deviation) for emotional acceptance and constituent items assessed via experience-sampling with group comparisons.

| Item | Total | Group | | | F |
		SP	GAD	Control	
Positive					
26	71.92	68.88	73.54	72.44	0.52
Okay	(15.32)	(13.54)	(14.63)	(16.61)	
28#	75.93	72.22	78.08	76.46	0.91
Change	(14.41)	(14.06)	(11.94)	(15.82)	
30	70.18	67.68	71.54	70.59	0.36
At Ease	(15.22)	(13.54)	(15.04)	(16.26)	
(Total)	72.68	69.59	74.39	73.16	0.66
	(13.91)	(12.12)	(12.98)	(15.25)	
Negative					
27	50.78	46.30	50.56	53.04	0.88
Okay	(18.21)	(17.98)	(17.78)	(18.70)	
29#	55.77	52.46	57.09	56.59	0.44
Change	(17.49)	(18.08)	(12.97)	(19.56)	
31	50.70	46.28	49.50	53.50	1.04
At Ease	(18.64)	(16.56)	(18.01)	(19.83)	
(Total)	52.42	48.35	52.38	54.38	0.89
	(16.20)	(15.58)	(13.88)	(17.67)	

Note. 0-100 scale. # = reverse scored items. M = mean; SD = standard deviation; F = omnibus ANOVA statistic; SP = social phobia analogue group; GAD = generalized anxiety disorder analogue group. Values with different superscript letters represent significant group differences at post-hoc follow-up with Bonferroni correction.
***p < .001, **p < .01, *p < .05.

On a 0-100 scale, participants averaged a rating of 72.68 (*SD* = 13.91) for items assessing the state acceptance of positive emotion, and an average rating of 52.42 (*SD* = 16.20) for items assessing the state acceptance of negative emotions. Results indicate that groups did not differ significantly with regard to state acceptance of positive [$F(2,79)$ = 0.66, p = .52] or negative emotion [$F(2,79)$ = 0.89, p = .41] at either the scale or item-level. These

findings stand in contrast to the expectation that the

analogue groups would report less acceptance (both positive

and negative) of emotions than the control group.

   Emotional attention/awareness. Descriptive statistics

and results of group comparisons with regard to state

attention/awareness of positive and negative emotion

assessed via ES are presented in Table 15 below.

Table 15. Mean (standard deviation) for emotional attention/awareness and constituent items assessed via experience-sampling with group comparisons.

| Item | Total | Group | | | F |
		SP	GAD	Control	
Positive					
1	45.42	41.35	45.42	47.36	0.68
Attention	(18.45)	(20.76)	(18.22)	(17.57)	
3	44.92	41.42	44.70	46.71	0.58
Thinking	(17.58)	(20.75)	(16.42)	(16.79)	
5	64.63	60.69	65.00	66.29	0.70
Valuable	(17.08)	(17.99)	(16.83)	(16.92)	
(Total)	51.66	47.82	51.71	53.45	0.81
	(15.82)	(18.33)	(15.07)	(15.04)	
Negative					
2	30.96	$29.61^{a,b}$	25.25^a	34.89^b	3.91*
Attention	(13.88)	(14.15)	(7.59)	(15.47)	
4	31.21	30.74	26.93	33.90	1.93
Thinking	(13.76)	(13.93)	(8.61)	(15.61)	
6	41.53	38.71	39.27	44.17	0.66
Valuable	(20.31)	(20.93)	(18.88)	(20.96)	
(Total)	34.57	33.02	30.48	37.66	2.28
	(13.54)	(14.26)	(8.95)	(14.86)	

Note. 0-100 scale. F = omnibus ANOVA statistic; SP = social phobia analogue group; GAD = generalized anxiety disorder analogue group. Values with different superscript letters represent significant group differences at post-hoc follow-up with Bonferroni correction.
***p < .001, **p < .01, *p < .05.

On a 0-100 scale, participants averaged a rating of 51.66 (SD = 15.82) for items assessing current attention/awareness of positive emotion and an average rating of 34.57 (SD = 13.54) for items assessing current attention/awareness of negative emotions. Results indicate that groups did not differ at the scale level with regard to attention/awareness of negative [$F(2,79)$ = 0.81, p = .45] or positive emotion [$F(2,79)$ = 2.28, p = .11].

At the item-level, only item 2 ("I am currently paying ATTENTION to my NEGATIVE feelings and emotions") differed across groups [$F(2,79)$ = 3.91; p = .02] such that the GAD analogue group gave significantly lower ratings on this item (M = 25.25, SD = 7.59) than did controls (M = 34.89, SD = 15.47; p = .02, d = .72). The SP analogue group (M = 29.61, SD = 14.15) did not differ significantly from other groups on this item. Overall, these results stand in contrast to expectations that the GAD analogue group would report greater attention/awareness of negative emotion and that the SP analogue group would report less attention/awareness of positive emotions.

Discussion

Emotion dysregulation, broadly defined, refers to

relative deficits in the identification, understanding,

management, or expression of emotion (Gratz & Roemer,

2004). Recent work has sought to supplement and expand our

understanding and treatment of anxiety disorders through

the application of emotion regulation frameworks,

particularly in GAD (e.g., Mennin et al., 2004; 2002), with

promising initial results. Turk et al. (2005) examined the

presence of emotion regulation deficits in GAD in

comparison with an anxiety control group (social phobia;

SP), producing the first evidence of both disorder-common

and disorder-specific deficits in emotion regulation across

the anxiety disorders. Additionally, results of Turk et

al. (2005) provided important insights regarding the

potential presence of such deficits in SP.

The purpose of the present study was to provide a

replication and extension of Turk et al. (2005) with a

particular focus on the emotion regulation deficits that

may uniquely characterize SP. Hypotheses were also

informed by recent work by Kashdan and colleagues (e.g.,

Kashdan & Breen; Kashdan & Steger, 2006), who have recently

developed a line of research examining aspects of emotion

and emotion regulation as they relate to individual

differences in social anxiety.

The present study involved collection of a large

convenience sample of undergraduates who were screened to

create SP and GAD clinical analogue groups, as well as a

non-anxious control group. Next, using personalized

digital assistants, experience-sampling (ES) data were

collected numerous times each day over the course of

approximately one week as participants lived their daily

lives. Participants responded to a series of items (all in

"state" format) designed to assess disorder-specific

symptoms along with emotion and various emotion regulation

constructs. Data were aggregated first at the person-level

and then at the group-level. Finally, numerous between-

group comparison analyses were conducted to infer about the

potential presence of differences in emotion and emotion

regulation that may characterize these disorders.

There are several unique and notable features of the

present study. First, this project was the first known to

examine aspects of emotion and emotion regulation in two

anxiety disorders concurrently using ES methodology, an

approach with a number of advantages over traditional

methods (Bolger et al., 2003). Second, following from work

explicating the separateness of positive and negative

affect (see Watson, 2000), as well as evidence offered by others that positive (but not negative) affect may be uniquely dysregulated in social phobia (e.g., Brown et al., 1998; Kashdan & Breen, 2008; Kashdan & Steger, 2006), this was the first known study to address separately positive and negative emotion regulation with regard to anxiety disorders. Finally, although not the primary purpose of the present study, this was the first known attempt to establish the presence symptoms of SP and GAD in individual's daily lives using computerized ES methodology.

Conclusions and Implications

Overall, mixed support was found for the research hypotheses. Support the presence of both disorder-common and disorder-specific deficits in emotion regulation in SP and GAD was generally methodologically specific. With regard to group comparisons of these constructs assessed via cross-sectional trait-oriented scales (most closely replicating the design of Turk et al., 2005), several results are of particular note.

Not surprisingly, findings suggest that both SP and GAD, when compared with non-anxious individuals, may be characterized by the heightened experience of negative affect, less experience of positive affect, and less acceptance of emotional experience. More interestingly,

however, was that this study failed to find evidence for disorder-specificity with regard to trait affectivity and emotional acceptance. These findings stand in contrast to previous work that has differentiated these conditions of the basis of affective profile (e.g., Brown et al., 1998) and models emphasizing the role of reduced emotional acceptance as particularly characteristic of GAD (Mennin et al., 2002). That these conditions may not differ with regard to reduced emotional acceptance, however, was anticipated and is consistent with Turk et al. (2005); offering further suggestion that this deficit is not specific to GAD.

It should be noted, however, that the same deficit can serve different functions in the context of different disorders. For example, it may be the case that reduced emotional acceptance in GAD facilitates experiential avoidance, whereas this same behavior in SP may be the consequence of poor emotional clarity (discussed below) such that emotions are not viewed as valuable. An essential next step in this line of research is to explicate these deficits in a manner sensitive to such contextual factors.

With regard to disorder-specific deficits, results of group comparisons of cross-sectional data suggest that

individuals with SP, when compared to individuals with GAD, may engage in more suppression of the expression of emotion and experience poorer clarity and awareness of emotion.

Comparisons conducted with data aggregated from numerous, repeated samplings of moment-to-moment daily experience generally failed to reveal evidence of group differences in the emotion or emotion regulation constructs of interest. Specifically, results found that the anxiety analogue groups did not differ from each other, or when compared to non-anxious individuals, with regard to the experience, expression, awareness, or acceptance of positive or negative affect. The aforementioned null findings call into question the presence of deficits proposed to characterize these disorders when sampled at the state level.

A not robust, but nonetheless notable, exception to this theme was that ES data provide some indication that SP may uniquely involve deficits in the clarity of emotion. Although the SP group failed to differentiate itself statistically from the GAD group with regard to this construct, this outcome appeared to be the result of limited power to detect such differences.

Although tentative at this point, this finding gives some indication that a hallmark of SP may prove to be a

limited ability to understand, label, and identify one's specific emotions, a process thought to be crucial not only in the regulation and expression of emotions, but also in emotion-related judgments (Salovey et al., 1995). This finding is consistent with previous work that has demonstrated a positive association between social anxiety and alexithymia (e.g., Cox et al., 1995; Fukunishi et al., 1997) and reports of poorer emotional clarity in a SP analogue group assessed via traditional self-report format (Turk et al., 2005). This finding may be particularly relevant given that leading theorists have posited that the ability to accurately understand one's emotional experience is an essential early step in the process of emotion regulation (e.g., Gratz & Roemer, 2004). Namely, a highly differentiated and accurate perception of our emotions may facilitate understanding of their causes, inform appropriate regulation strategies, and serve as a feedback loop as to the success of such strategies.

Analyses performed here do not, however, provide insight regarding the causes or consequences of poor emotional clarity. It seems that this would be an important next step in this research. For example, it may be that socially anxious individuals devote excessive cognitive resources to monitoring the external environment

for threat and do not have sufficient remaining resources to adequately monitor and decipher their own emotional experiences. On the other hand, the relative deficit in emotional clarity associated with SP could be the byproduct of other deficits in emotion regulation. For example, greater use of expressive suppression may have the effect of clouding one's ability to extrapolate information from their emotions.

A final important note is this that study (as has overwhelming been the case in other research) technically assessed *perceived* emotional clarity. It could be the case that this trend could be better explained by other factors (e.g., general negative interpretation bias regarding one's emotions) as opposed to an actual deficit in emotional clarity. Therefore, future research should seek to confirm this finding using experimental methods, particularly those that involve the means to assess the objective accuracy of experimentally-induced emotional experience.

Another salient finding of this study was that the results of ES methodology call into question whether individuals with SP or GAD actually experience more negative or less positive emotion in their daily lives when compared to non-anxious individuals. The discrepancy of results at the "trait" versus moment-to-moment level could

possibly be explained by the presence of a negative bias in retrospective memory (consistent with cognitive models of anxiety disorders; for a review see Beck & Emery, 1985). However, such an interpretation would require a drastic change in the way we view the emotional experiences of individuals with these conditions.

Such a conclusion, beyond being highly unexpected, stands in contrast to expert consensus (e.g., DSM-IV-TR; APA, 2000) and a great deal of previous research (e.g., Brown et al., 1998). For example, Kashdan and Steger (2006) found a correlation of .56 between trait and state measures of social anxiety. Thus, the more parsimonious conclusion is that this study simply failed to reveal these differences. Although the reason is not readily apparent, it could be the result of limited power to detect such effects, conservative data aggregation methods, and restricted range resulting from the use of analogue (as opposed to clinical) participants.

As previously discussed, recent research has pointed toward an association between heightened social anxiety and a propensity to suppress the expression of emotion, presumably reflective of an attempt to reduce the communication of valenced reactions that could be negatively evaluated or not reciprocated by others (see

Kashdan & Steger, 2006; Turk et al., 2005). The current

study found support for this relationship at the level of

trait-oriented report but not at moment-to-moment state

experience. It could be the case that socially anxious

individuals, who appear to be less clear about their

emotions, may simply not be as aware when they are using

suppression at a given moment. Further research,

particularly that which involves direct behavioral

observation concurrently with experiential self-report, may

be necessary to confirm that this disorder can, in fact, be

characterized by greater suppression of experienced

emotion.

As previously mentioned (and consistent with Turk et

al., 2005), evidence from traditional survey data presented

here suggests that SP may involve paying less attention to

and having less awareness of one's emotions. However,

these findings were not replicated at the level of moment-

to-moment experience. These factors are important to

continue to examine in future work, as it is thought that

the degree to which one accepts and attends to emotions

facilitates the application of appropriate regulation

strategies (e.g., Gratz & Roemer, 2004; Hayes et al., 1996)

Although not a focus of the present study, use of a new

measure of emotion regulation (the DERS) suggests that

individuals with either of these disorders, when experiencing heightened negative affect, may perceive having a reduced ability to engage in emotional management strategies, refrain from maladaptive impulsive behavior, and retain goal-directed behaviors. In other words, it appears that both SP and GAD can also be characterized as conditions that, when dealing with upset, involves less use of adaptive emotion regulation strategies, a greater propensity towards impulsive behavior, and a greater deviation from intended behavior. Although only broadly assessed by the DERS, these findings indicate that the likely existence of other disorder-common deficits in emotion regulation beyond those that were explicitly investigated here, and further suggest new directions that could be taken with regard to emotion regulation models of these anxiety disorders. However, further investigation may reveal that these findings may simply reflect different ways of describing deficits already well-known to be characteristic of these conditions. For example, behavioral avoidance could be described as an "impulsive" act that involves derailing "goal-directed" behavior.

Results of this study are of course relevant for GAD. Not surprisingly, results of cross-sectional trait-oriented scales provide further evidence that individuals with GAD

utilize excessive worry. However, findings were not highly supportive of the specificity of Mennin and colleague's model to GAD (Mennin et al., 2004; 2002). Namely, evidence presented here suggests that GAD may be characterized by heightened negative emotion, poor emotional clarity, and less emotional acceptance; but not to a greater degree than in SP.

Interestingly, incongruent with the model and results of similar studies (Heimberg et al., 2005; Turk et al. 2005), results of this study suggest that GAD does not involve deficits in emotional awareness, a finding that has emerged elsewhere (Novick-Kline et al., 2005; Salters-Pedneault, 2006) and is consistent with the notion that individuals with GAD do not have limited awareness of emotions, but rather experience them as diffuse, confusing, and threatening.

As previously indicated, this was the first study to assess disorder-specific symptoms in analogue groups of clinical anxiety disorders using computerized ES. Although commonly assumed to be the case, this was the first known study to offer confirmatory evidence that individuals with SP, when compared to anxious and non-anxious controls, experience higher levels of concern about evaluation and more often avoid social situations in their daily lives.

Interestingly, when examining social avoidance indirectly by having participants report about who they were with a given time, however, results suggest that these individuals may not actually spend any more time alone.

Relevant for this aforementioned finding, a recent ES study conducted by Brown et al. (2007) found that social anhedonia (a construct commonly associated with schizoidal adjustment and negative symptoms of schizophrenia), but not social anxiety, was associated with more time spent alone. Further, this finding is consistent with cognitive models of social anxiety that emphasize the role of cognitive errors and distortions (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997), as it could be the case that individuals with SP over-report the degree to which they actually avoid social situations. Alternatively, however, it could also be the case that individuals in the SP analogue group spent a greater amount of time with a relatively smaller number of "safe" others or were perhaps more encompassing in their definition of being "alone."

Limitations and Future Directions

Several limitations of this study are notable beyond those already mentioned. First and foremost, several factors suggest that this study may have involved a bias towards committing Type II errors (i.e., false negatives)

in failing to reveal actual (but perhaps small) group differences with regard to ES data. Indeed, samples sizes for the ES portion of the study were relatively small, particularly for the clinical analogue groups. Further, analyses were made more conservative by the use of Bonferroni correction and ES was aggregated in a manner that tends to limit statistical power. Recall, however, that this study involved a massive number of experience-samplings per person, a large number of group comparisons, and a stated purpose to replicate previous findings. In this context, a more conservative approach to data aggregation and analysis is warranted in the context of factors that significantly increase the risk for Type I errors (i.e., false positives).

There are also several factors that may limit the generalizability of the findings. Namely, this study utilized participants selected from a convenience sample of college students to represent clinical analogue groups. This choice was made given the relative infancy of this area of research (following the recommendations of Kazdin, 2003), and practical considerations associated with ES research (as has been done successfully elsewhere; e.g., Turk et al., 2005; Salters-Pedneault et al., 2006). Although these individuals were selected because they

scored at levels similar to those formally diagnosed with SP or GAD on relevant self-report measures, there may exist unintended but important differences between these participants and a true clinical sample (e.g., chronicity, level of functioning).

Also recall, however, that the measures and cut-off scores used to create analogue groups have demonstrated the ability in previous research to select individuals who do not differ meaningfully from clinical samples with regard to symptom severity or overall impairment. Further evidence of the validity of the clinical analogue groups is provided by the fact that both groups' means exceeded the clinical cut-off scores for other measures not used to create groups, but that have been used for this purpose elsewhere (i.e., SPDQ for the SP analogue group; PSWQ for the GAD analogue group). Finally, the majority of participants were predominantly female and Caucasian. Taken together, the applicability of these results to more diverse and clinical (i.e., diagnoses based upon a full clinical interview) samples awaits further examination.

One other potential issue of concern is that the recruitment procedures involved numerous steps, with only a minority portion of the individuals who qualified for group membership actually providing ES data. It may be that

completers differed from non-completers in ways that could potentially bias the results. As was previously discussed, however, results of statistical analyses were not supportive of the presence of such a bias. However, it should be considered that these participants may differ with regard to other variables that are relevant to interpreting the findings but were not assessed (e.g., degree of openness to experience).

It is also important to note that processes of emotion regulation likely exist upon a continuum of awareness, ranging from automatic processes to explicitly conscious strategies (Gross & Thompson, 2007). This study focused solely on behavior available to conscious report. As discussed by Salters-Pedneault (2006), when studying emotion and emotion regulation it is necessary to recognize the demonstrated limitations of self-report methodology (e.g., Nisbett & Wilson, 1977), particularly with regard to reports on emotion (e.g., Davies, Stankov, & Roberts, 1998; Westen, 1994). A particular concern is questionable concordance between participant's self-reports and actual emotion regulation activities (see Feldner, Zvolensky, Stickle, Bonn-Miller, & Leen-Feldner, 2006), especially given that these individuals are suspected of have

difficulties assessing and reporting upon their emotional experiences.

There is reason to believe, however, that the ES portion of this study was less subject to self-report biases because of the minimal lag between the prompt for report and the behavior being reported on (a factor thought to reduce such bias). In sum, caution is warranted in interpreting these findings given that this study focused solely on self-reports of conscious processes and behaviors. Future research should seek convergence with these findings by studying these constructs in ways that account for these limitations (e.g., physiological reactivity, direct behavioral observation).

It should also be noted that while the majority of the self-report measures used in this study are well-established, the Difficulties in Emotion Regulation Scale (DERS) is a relatively new measure that awaits further tests to confirm its thus far promising psychometric properties. Regarding measurement, perhaps a more concerning issue was that ES items were created for the purposes of this study and have therefore not been validated elsewhere. While a degree of variability is expected when comparing a construct in a "state" as opposed to a "trait" format, many correlations between cross-

sectional self-report measures with their ES counterparts were lower and more varied than expected. However, it could also be the case that traditional cross-sectional self-report and ES methodology access overlapping but importantly different aspects of constructs of emotion and emotion regulation. Future research will be necessary to confirm the validity of these items and determine their relative validity to traditional established measures.

Finally, a notable strength of this study presumably includes its relatively high degree of external validity, as evidenced by the use of naturally-forming groups and the collection of data from daily experiences (with no requests to modify behavior). However, as is necessarily the case, these design features likely come at the cost of a commensurate degree of internal validity and precludes making causal assumptions about group differences. Therefore, future research should pursue convergence with the findings presented here via alternative designs. Particularly valuable may be emotion regulation research that is experimental in nature, with an emphasis on maximizing internal validity (for a review see Salters-Pednault, Tull, & Roemer, 2004). Further, future research (both with the data presented here and otherwise) may seek to test research questions regarding the temporal

relationships between emotion regulation constructs (e.g.,

is poor emotional clarity at time "A" associated with less

emotional acceptance at time "B").

In sum, continued research regarding the nature of

emotion and emotion dysregulation associated with anxiety

disorders, including SP and GAD, will likely help improve

our understanding of these conditions. In particular,

these findings provide some, albeit mixed, evidence that

interventions for these conditions may be improved by an

explicit emphasis on emotion regulation factors.

References

American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.). American Psychiatric Association: Washington, DC.

Alliger, G. M., & Williams, K. J. (1993). Using signal-contingent experience sampling methodology to study work in the field: A discussion and illustration examining task perceptions and mood. *Personnel Psychology, 46,* 525-549.

Baker, R., Holloway, J., Thomas, P. W., Thomas, S., & Owens, M. (2004). *Emotional processing and panic.* Behaviour Research and Therapy, *42*(11), 1271-1287.

Barlow, D. H. (1988). *Anxiety and its disorders: The nature and treatment of anxiety and panic*. New York: Guilford Press.

Barlow, D. H. (2002). Fear, anxiety, and theories of emotion. In D. H. Barlow (Ed.), *Anxiety and its disorders: The nature and treatment of anxiety and panic* (pp. 37-63). New York: Guilford Press.

Barlow, D. H., Allen, L. B., & Choate, M. L. (2004). Toward a unified treatment for emotional disorders. *Behavior Therapy, 35,* 205-230.

Barrett, D. J., & Feldman-Barrett, L. (2005). The Experience Sampling Program (ESP), version 4.0. Retrieved June 11, 2005 from http://www.experience-sampling.org/esp/.

Beck, A. T., & Emery, G. (1985). *Anxiety disorders and phobias: A cognitive perspective.* New York: Basic Books.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *BDI-II Manual.* (2nd ed.). San Antonio, TX: Psychological Corporation.

Behar, E., Alcaine, O., Zuellig, A. R., & Borkovec, T. D. (2003). Screening for generalized anxiety disorder using the Penn State Worry Questionnaire: A receiver operating characteristic analysis. *Journal of Behavior Therapy and Experimental Psychiatry, 34*(1), 25-43.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54,* 579-616.

Borcovek, T. D., Alcaine, O., & Behar, E. (2004). Avoidance theory of worry and generalized anxiety disorder. In R. G. Heimberg, C. L. Turk, & D. S. Mennin (Eds.), *Generalized anxiety disorder: Advances in research and practice* (pp. 77-108). New York: Guilford Press.

Borcovek, T. D., & Hu, S. (1990). The effect of worry on cardiovascular response to phobic imagery. *Behaviour Research and Therapy, 28,* 69-73.

Borcovek, T. D., & Roemer, L. (1995). Perceived functions of worry among generalized anxiety disorder subjects: Distraction from more emotional topics? *Journal of Behavior Therapy and Experimental Psychiatry, 26,* 25-30.

Brown, E. J., Turovsky, J., & Heimberg, R. G. (1997). Validation of the Social Interaction Anxiety Scale and the Social Phobia Scale across the anxiety disorders. *Psychological Assessment, 9*(1), 21-27.

Brown, L. H., Silvia, P. J., Myin-Germeys, I., & Kwapil, T. R. (2007). When the need to belong goes wrong: The expression of social anhedonia and social anxiety in daily life. *Psychological Science, 18*(9), 778-782.

Brown, T. A., Antony, M., & Barlow, D. H. (1992). Psychometric properties of the Penn State Worry Questionnaire in a clinical anxiety disorders sample. *Behaviour Research and Therapy, 30*(1), 33-37.

Brown, T. A., Barlow, D. H., & Liebowitz, M. R. (1994). The empirical basis of generalized anxiety disorder. *American Journal of Psychiatry, 151,* 1272-1280.

Brown, T. A., Chorpita, B. F., & Barlow, D. H. (1998).
Structural relationships among dimensions of the DSM-IV
anxiety and mood disorders and dimensions of negative
affect, positive affect, and autonomic arousal. *Journal
of Abnormal Psychology, 107,* 179-192.

Brown, T. A., DiNardo, P. A., & Barlow, D. H. (1994).
*Anxiety Disorders Interview Schedule for DSM-IV (ADIS-
IV).* San Antonio, TX: The Psychological Corporation.

Clark, D. M., & Wells, A. (1995). A cognitive model of
social phobia. In R. G. Heimberg, M. R. Liebowitz, D.
A. Hope, & F. R. Schneier (Eds.), *Social phobia:
Diagnosis, assessment, and treatment* (pp. 69-93). New
York: Guilford Press.

Clark, L. A., & Watson, D. (1991). Tripartite model of
anxiety and depression: Psychometric evidence and
taxonomic implications. *Journal of Abnormal Psychology,
110,* 316-336.

Cloitre, M., Scarvalone, P., & Difede, J. (1997).
Posttraumatic stress disorder, self- and interpersonal
dysfunction among sexually retraumatized women. *Journal
of Traumatic Stress, 10*(3), 437-452.

Conner-Christensen, T., Feldman-Barrett, L., Bliss-Moreau,
E., Lebo, K., & Kaschub, C. (2003). A practical guide

to experience-sampling procedures. *Journal of Happiness Studies, 4,* 53-78.

Cox, B. P., Swinson, R. P., Shulman, I. D., & Bourdeau, D. (1995). Alexithymia in panic disorder and social phobia. *Comprehensive Psychiatry, 36,* 195-198.

Csikszentmihalyi, M., & Larson, R. (1987). Validity and reliability of the experience sampling method. *Journal of Nervous and Mental Disease, 175,* 526-537.

Davies, M., Stankov, L., & Roberts, R. D. (1998). Emotional intelligence: In search of an elusive construct. *Journal of Personality and Social Psychology*, 75, 989–1015.

Dijkman-Caes, C. I., & deVries, M. W. (1987). The social ecology of anxiety: Theoretical and quantitative perspectives. *Journal of Nervous and Mental Disease, 175*(9), 550-557.

Dijkman-Caes, C. I., & deVries, M. W. (1991). Daily life situations in panic disorder and agoraphobia. *Journal of Anxiety Disorders, 5*(4), 343-357.

Dijkman-Caes, C. I., deVries, M. W., Kraan, H. F., & Volovics, A. (1993). Agoraphobic behavior in daily life: Effects of social roles and demographic characteristics. *Psychological Reports, 72*(3), 1283-1293.

Dozois, D. J. A., Dobson, K. S., & Ahnberg, J. L. (1998). A
psychometric evaluation of the Beck Depression
Inventory-II. *Psychological Assessment, 10*(2), 83-89.

Ericsson, K. A., & Simon, H. A. (1980). Verbal reports as
data. *Psychological Review, 87,* 215-251.

Feldman-Barrett, L. (2004). Feelings or words?
Understanding the content in self-report ratings of
emotional experience. *Journal of Personality and Social
Psychology, 87*(2), 266-281.

Feldner, M. T., Zvolensky, M. J., Stickle, T. R., Bonn-
Miller, M. O., & Leen-Feldner, E. W. (2006). Anxiety
sensitivity-physical concerns as a moderator of the
emotional consequences of emotion suppression during
biological challenge: An experimental test using
individual growth curve analysis. *Behaviour Research
and Therapy, 44,* 249-272.

Frijda, N. H. (1986). *The emotions.* Cambridge, UK:
Cambridge University Press.

Fresco, D. M., Mennin, D. S., Heimberg, R. G., & Turk, C.
L. (2003). Using the Penn State Worry Questionnaire to
identify individuals with generalized anxiety disorder:
A receiver operating characteristic analysis. *Journal
of Behavior Therapy and Experimental Psychiatry, 34*(3-
4), 283-291.

Fukunishi, I., Kikuchi, M., Wogan, J., & Takubo, M. (1997). Secondary alexithymia as a state reaction in panic disorder and social phobia. *Comprehensive Psychiatry, 38,* 166-170.

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties with Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment, 26*(1), 41-54.

Gray, J. A. (1982). *The neuropsychology of anxiety*. New York: Oxford University Press.

Gross, J. J. (1998). Antecedent- and response-focused emotion regulation: Divergent consequences for experience, expression and physiology. *Journal of Personality and Social Psychology, 74,* 224-237.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85*, 348-362.

Gross, J. J., & Levenson, R. W. (1997). Hiding feelings: The acute effects of inhibiting negative and positive emotion. *Journal of Abnormal Psychology, 106*(1), 95-103.

Gross, J. J., & Muñoz, R. F. (1995). Emotion regulation and
     mental health. *Clinical Psychology: Science and
     Practice, 2*(2), 151-164.

Gross, J. J., & Thompson, R. A. (2007). Emotion regulation:
     Conceptual foundations. In J. J. Gross (Ed.), *Handbook
     of emotion regulation* (pp. 3-24). New York: Guilford
     Press.

Hayes, S. G., Wilson, K. G., Gifford, E. V., Follette, V.
     M., & Strosahl, K. D. (1996). Experiential avoidance
     and behavioral disorders: A functional dimensional
     approach to diagnosis and treatment. *Journal of
     Consulting and Clinical Psychology, 64,* 1152-1168.

Heimberg, R. G., Mueller, G. P., Holt, C. S., Hope, D. A., &
     Liebowitz, M. R. (1992). Assessment of anxiety in
     social interaction and being observed by others: The
     Social Interaction Anxiety Scale and the Social Phobia
     Scale. *Behavior Therapy, 23*(1), 53-73.

Heimberg, R. G., & Turk, C. L. (2002). Assessment of social
     phobia. In R. G. Heimberg and R. E. Becker (Eds.),
     *Cognitive-behavioral group therapy for social phobia:
     Basic mechanisms and clinical strategies* (pp. 107-126).
     New York: Guilford Press.

Heimberg, R. G., Turk, C. L., & Mennin, D. S. (Eds.),
    (2003). *Generalized anxiety disorder: Advances in
    research and practice.* New York: Guilford Press.

Hormuth, S. E. (1986). The sampling of experiences in situ.
    Journal of Personality, 54, 262-293.

Kashdan, T. B., & Breen, W. E. (2008). Social anxiety and
    positive emotions: A prospective examination of a self-
    regulatory model with tendencies to suppress or express
    emotions as a moderating variable. *Behavior Therapy,
    39,* 1-12.

Kashdan, T. B., & Steger, M. F. (2006). Expanding the
    topography of social anxiety: An experience sampling
    assessment of positive emotions, positive events, and
    emotion suppression. *Psychological Science, 17*(2), 120-
    128.

Katzelnick, D. J., Kobak, K. A., DeLeire, T., Henk, H. J.,
    Greist, J. H., Davidson, R. J. T., Schneier, F. R.,
    Stein, M. B., & Helstad, C. P. (2001). Impact of
    generalized social anxiety disorder in managed care.
    American Journal of Psychiatry, 158, 1999-2007.

Kazdin A. E. (2003). *Methodological issues and strategies
    in clinical research.* Washington, DC: American
    Psychological Association.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., &
Walters, E. E. (2005). Lifetime prevalence and age-of-
onset distributions of DSM-IV disorders in the National
Comorbidity Survey Replication. *Archives of General
Psychiatry, 62,* 593-602.

Kring, A. M. (2001). Emotions and psychopathology. In T. J.
Mayne and G. A. Bonanno (Eds.), *Emotions* (pp. 337-360).
New York: Guilford Press.

Larson, R. (1989). Beeping children and adolescents: A
method for studying time use and daily experience.
Journal of Youth and Adolescence, 18(6), 511-530.

Levitt, J. T., Brown, T. A., Orsillo, S. M., & Barlow, D. H.
(2004). The effects of acceptance versus suppression of
emotion on subjective and psychophysiological response
to carbon dioxide challenge in patients with panic
disorder. *Behavior Therapy, 35*(4), 747-766.

Linehan, M. (1993). *Cognitive-behavioral treatment of
borderline personality disorder.* New York: Guilford
Press.

Massion, A., Warshaw, M., & Keller, M. (1993). Quality of
life and psychiatric morbidity in panic disorder versus
generalized anxiety disorder. *American Journal of
Psychiatry, 150,* 600-607.

Masters, J. C. (1991). Strategies and mechanisms for the personal and social control of emotion. In J. Garber & K. Dodge (Eds.), *The development of emotion regulation and dysregulation: Cambridge studies in social and emotional development* (pp. 182-207). New York: Cambridge University Press.

Mattick, R., & Clarke, J. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy, 36,* 455-470.

Mennin, D. S. (2004). Emotion regulation therapy for generalized anxiety disorder. *Clinical Psychology and Psychotherapy, 11,* 17-29.

Mennin, D. S., Heimberg, R. G., Turk, C. L., & Fresco, D. M. (2002). Applying an emotion regulation framework to integrative approaches to generalized anxiety disorder. *Clinical Psychology: Science and Practice, 9*(1), 85-90.

Mennin, D. S., Heimberg, R. G., Turk, C. L., & Fresco, D. M. (2005). Preliminary evidence for an emotion dysregulation model of generalized anxiety disorder. *Behaviour Research and Therapy, 43*(10), 1281-1310.

Mennin, D. S., Turk, C.L., Heimberg, R.G., & Carmin, C. (2004). Focusing on the regulation of emotion: A new direction for conceptualizing and treating generalized

anxiety disorder. In M. A. Reinecke and D. A. Clark

(Eds.), *Cognitive therapy over the lifespan: Theory,*

research, and practice (pp. 60-89). New York: Wiley.

Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T.

D. (1990). Development and validation of the Penn State

Worry Questionnaire. *Behaviour Research and Therapy,*

28, 487-495.

Mischel, W. (1981). A cognitive-social learning approach to

assessment. In T. Merluzzi, C. Glass, & M. Genest

(Eds.), *Cognitive assessment.* New York: Guilford Press.

Molina, S., & Borkovec, T. D. (1994). The Penn State Worry

Questionnaire: Psychometric properties and associated

characteristics. In G. C. L. Davey & F. Tallis (Eds.),

Worrying: Perspectives on theory, assessment and

treatment (pp. 265-283). Oxford, England: John Wiley &

Sons.

Newman, M. G., Castonguay, L. G., Borkovec, T. D., & Molnar,

C. (2004). Integrative therapy for generalized anxiety

disorder. In R. G. Heimberg, C. L. Turk, & D. S. Mennin

(Eds.), *Generalized anxiety disorder: Advances in*

research and practice (pp. 320-350). New York: Guilford

Press.

Newman, M. G., Consoli, A. J., & Taylor, C. B. (1999). A

palmtop computer program for the treatment of

generalized anxiety disorder. *Behavior Modification,*
23(4), 597-619.

Newman, M. G., Kachin, K. E., Zuellig, A. R., Constantino,
M. J., & Cashman-McGrath, L. (2003). The Social Phobia
Diagnostic Questionnaire: Preliminary validation of a
new self-report diagnostic measure of social phobia.
Psychological Medicine, 33, 623-635.

Newman, M. G., Zuellig, A. R., Kachin, K. E., Constantino,
M. J., Przeworski, A., Erickson, T., & Cashman-McGrath,
L. (2002). Preliminary reliability and validity of the
generalized anxiety disorder questionnaire-IV: A
revised self-report diagnostic measure of generalized
anxiety disorder. *Behavior Therapy, 33,* 215-233.

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than
we can know: Verbal reports on mental processes.
Psychological Review, 84, 231–259.

Novick-Kline, P., Turk, C. L., Mennin, D. S., Hoyt, E. A., &
Gallahger, C. L. (2005). Level of emotional awareness
as a differentiating variable between individuals with
and without generalized anxiety disorder. *Anxiety*
Disorders, 19, 557-572.

Oishi, S. (2002). The experiencing and remembering of well-
being: A cross-cultural analysis. *Personality and*
Social Psychology Bulletin, 28(10), 1398-1406.

Orsillo, S. M. (2001). Measures for social phobia. In M. M.

    Antony, S. M. Orsillo, & Roemer, S. M. (Eds.),

    Practitioner's guide to empirically based measures of

    anxiety (pp. 165-187). Dordrecht, Netherlands: Kluwer

    Academic Publishers.

Peters, L. (2000). Discriminant validity of the Social

    Phobia and Anxiety Inventory (SPAI), the Social Phobia

    Scale (SPS), and the Social Interaction Anxiety Scale

    (SIAS). *Behaviour Research and Therapy, 38*(9), 943-950.

Przeworski, A., & Newman, M. G. (2004). Palmtop computer-

    assisted group therapy for social phobia. *Journal of*

    Clinical Psychology, 60(2), 179-188.

Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-

    behavioral model of anxiety in social phobia. *Behaviour*

    Research and Therapy, 35, 741-756.

Reis, H. T., & Gable, S. L. (2000). Event-sampling and other

    methods for studying everyday experience. In H. T. Reis

    and C. M. Judd (Eds.), *Handbook of research methods in*

    social personality psychology (pp. 190-222). New York:

    Cambridge University Press.

Richards, J. M., & Gross, J. J. (2000). Emotion regulation

    and memory: The cognitive costs of keeping one's cool.

    Journal of Personality and Social Psychology, 79, 410-

    424.

Rodebaugh, T. L., Woods, C. M., Heimberg, R. G., Liebowitz, M. R., & Schneier, F. R. (2006). The factor structure and screening utility of the Social Interaction Anxiety Scale. *Psychological Assessment, 18*(2), 231-237.

Roemer, L., & Orsillo, S. M. (2002). Expanding our conceptualization of and treatment for generalized anxiety disorder: Integrating mindfulness/acceptance-based approaches with existing cognitive-behavioral models. *Clinical Psychology: Science and Practice, 8,* 54-68.

Roemer, L., Salters, K., Raffa, S., & Orsillo, S. M. (2005). Fear and avoidance of internal experiences in GAD: Preliminary tests of a conceptual model. *Cognitive Therapy and Research, 29,* 71-88.

Rottenberg, J., & Gross, J. J. (2003). When emotion goes wrong: Realizing the promise of affective science. *Clinical Psychology: Science and Practice, 10(2),* 227-232.

Rude, S. S., & McCarthy, C. T. (2003). Emotional functioning in depressed and depression-vulnerable college students. *Cognition and Emotion, 17*(5), 799-806.

Salovey, P., Mayer, J. D., Goldman, S., Turvey, C, & Palfai, T. (1995). Emotional attention, clarity, and repair: Exploring emotional intelligence using the Trait Meta-

Mood Scale. In J. W. Pennebaker (Ed.), *Emotion,*

disclosure, and health (pp. 125-154). Washington,

D.C.: American Psychological Association.

Salters-Pedneault, K., Roemer, L., Tull, M. T., Rucker, L.,

& Mennin, D. S. (2006). Evidence of broad deficits in

emotion regulation associated with chronic worry and

generalized anxiety disorder. *Cognitive Therapy and*

Research, 30, 469-480.

Salters-Pedneault, K., Tull, M. T., & Roemer, L. (2004).

The role of avoidance of emotional material in the

anxiety disorders. *Applied and Preventive Psychology,*

11, 95–114.

Schneier, F. R., Heckelman, L. R., Garfinkel, R., Campeas,

R., Fallon, B., Gitow, A., Street, L., DelBene, D., &

Liebowitz, M. R. (1994). Functional impairment in

social phobia. *Journal of Clinical Psychiatry, 55*, 322-

331.

Schwartz, J. E., & Stone, A. A. (1998). Strategies for

analyzing ecological momentary assessment data. *Health*

Psychology, 17, 6-16.

Scollon, C. N., Kim-Prieto, C., & Diener, E. (2003).

Experience sampling: Promises and pitfalls, strengths

and weaknesses. *Journal of Happiness Studies, 4,* 5-34.

Startup, H. M., & Davey, G. C. L. (2001). Mood as input and catastrophic worrying. *Journal of Abnormal Psychology, 110*, 83-96.

Steer, R. A., Kumar, G., Ranieri, W. F., & Beck, A. T. (1998). Use of the Beck Depression Inventory-II with adolescent psychiatric outpatients. *Journal of Psychopathology and Behavioral Assessment, 20*(2), 127-137.

Turk, C. L., Heimberg, R. G., Luterek, J. A., Mennin, D. S., & Fresco, D. M. (2005). Emotion dysregulation in generalized anxiety disorder: A comparison with social anxiety disorder. *Cognitive Therapy and Research, 29*(1), 89-106.

Watson, D. (2000). *Mood and temperament.* New York: Guilford Press.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063-1070.

Wells, A., & Papageorgiou, C. (1995). Worry and the incubation of intrusive images following stress. *Behaviour Research and Therapy, 33,* 579-583.

Westen, D. (1994). Toward an integrative model of affect

regulation: Applications to social-psychological

research. *Journal of Personality*, *62,* 641–667.

Wittchen, H. U., Zhao, S., Kessler, R. C., & Eaton, W. W.

(1994). DSM-III-R generalized anxiety disorder in the

National Comorbidity Survey. *Archives of General*

Psychiatry, 51, 355-364.

Appendix A

Survey Measures Created for this Study

i.   Demographic Questionnaire

DEMOGRAPHIC INFORMATION

Part. #_____

Date: _____

1. Age: ____

2. Gender (circle one):   (0) M   (1) F

3. Marital status (circle one):
      1 = single; never married
      2 = married
      3 = separated
      4 = divorced
      5 = widowed

4. Year in college: ____

5. Religious preference (circle one):
      1 = Catholic
      2 = Protestant
      3 = Methodist
      4 = Lutheran
      5 = Jewish
      6 = Islamic
      7 = Other _____

6. How much do you participate in your religion (circle one)?
Not at all A little Moderately Often Very often
    1   2   3   4   5

7. How important is your religion to you (circle one)?
Not at all   Moderately   Very
   1   2   3   4   5

8. Ethnicity (circle one):
      1 = White (non-Hispanic)
      2 = African American (non-Hispanic)
      3 = Hispanic
      4 = Asian American
      5 = Pacific Islander
      6 = Native American / Alaskan Native
      7 = Middle Eastern
      8 = Other _____

9. Throughout childhood and adolescence I grew up with (circle one):
      1 = both parents
      2 = mother only
      3 = father only
      4 = grandparents
      5 = other _____

10. How many brothers and sisters do you have?
_____brothers   _____sisters

11. How old are you compared to your brothers and sisters (circle one)?
      1 = I am the oldest
      2 = I am somewhere in the middle
      3 = I am the youngest
      4 = I am an only child
      5 = I am the same age

12. Please estimate the annual income of your family while you lived at home (circle one):
      1 = less than $9,000
      2 = 9,000 – 13,999
      3 = 14,000 – 19,999
      4 = 20,000 – 34,999
      5 = 35,000 – 59,999
      6 = 60,000 – 99,999
      7 = more than 100,000

13. How often have you seen your family over the past 6 months (circle one)?
      1 = daily
      2 = weekly
      3 = monthly
      4 = less than monthly
      5 = none

14. What is the population of your home town (circle one)?
      1 = less than 5,000
      2 = 5,000 – 9,999
      3 = 10,000 – 49,999
      4 = 50,000 – 99,999
      5 = 100,000 – 499,999
      6 = more than 500,000

15. Where do you currently live?
      1 = residence hall
      2 = apartment or rented house
      3 = fraternity / sorority house
      4 = own your own house
      5 = live with parents
      6 = other _____

16. Who do you live with?
      1 = alone
      2 = a roommate(s)
      3 = a significant other
      4 = family

Appendix B

Experience-Sampling Items Created for this Study

i. Experience-Sampling Items

Item	Item Content	Response Options/Anchors	Loading
1	I am currently paying ATTENTION to my POSITIVE feelings and emotions.	[Not at All] to [Extremely]	AT(P)
2	I am currently paying ATTENTION to my NEGATIVE feelings and emotions.	[Not at All] to [Extremely]	AT(N)
3	I am currently THINKING ABOUT my POSITIVE feelings and emotions.	[Not at All] to [Extremely]	AT(P)
4	I am currently THINKING ABOUT my NEGATIVE feelings and emotions.	[Not at All] to [Extremely]	AT(N)
5	My current POSITIVE emotions and feelings are WORTHWHILE and VALUABLE.	[Not at All] to [Extremely]	AT(P)
6	My current NEGATIVE emotions and feelings are WORTHWHILE and VALUABLE.	[Not at All] to [Extremely]	AT(N)
7	WHERE are you (Check the ONE that BEST describes)?	[My Residence] or [Class/Study] or [Location] or [Work] or [Public Place/Outside] or [Family's/Friend's] or [Other]	XX
8	WHO is with you (Check the ONE that BEST describes)?	[Alone] or [Roommates/Friends] or [Family] or [Professionals] or [Strangers] or [Other]	C AV
9	WHAT are you doing (Check the ONE that BEST describes)?	[Inactive/Resting] or [Studying/Working] or [Leisure/Socializing] or [Self-Maintenance] or [In-Transit] or [Other]	XX
10	I am currently feeling SLUGGISH.	[Not at All] to [Extremely]	EI(N)
11	I am currently feeling AFRAID.	[Not at All] to [Extremely]	EI(N)
12	I am currently feeling SAD.	[Not at All] to [Extremely]	EI(N)
13	I am currently feeling ANGRY.	[Not at All] to [Extremely]	EI(N)
14	I am currently feeling ANXIOUS.	[Not at All] to [Extremely]	EI(N)
15	I am currently feeling RELAXED.	[Not at All] to [Extremely]	EI(P)
16	I am currently feeling PROUD.	[Not at All] to [Extremely]	EI(P)
17	I am currently feeling EXCITED.	[Not at All] to [Extremely]	EI(P)

18	I am currently feeling APPRECIATIVE.	[Not at All] to [Extremely]	EI(P)
19	I am currently feeling ENTHUSIASTIC.	[Not at All] to [Extremely]	EI(P)
20	I am currently feeling HAPPY.	[Not at All] to [Extremely]	EI(P)
21	I am currently feeling JOY.	[Not at All] to [Extremely]	EI(P)
22	I am currently feeling AMUSED.	[Not at All] to [Extremely]	EI(P)
23	I am currently feeling NERVOUS.	[Not at All] to [Extremely]	EI(N)
24	I am currently feeling GUILTY.	[Not at All] to [Extremely]	EI(N)
25	I am currently feeling ASHAMED.	[Not at All] to [Extremely]	EI(N)
26	I am OKAY with my current POSITIVE feelings and emotions	[Not at All] to [Completely]	AC(P)
27	I am OKAY with my current NEGATIVE feelings and emotions.	[Not at All] to [Completely]	AC(N)
28#	I WANT to CHANGE my current POSITIVE feelings and emotions	[Not at All] to [Completely]	AC(P)
29#	I WANT to CHANGE my current NEGATIVE feelings and emotions	[Not at All] to [Completely]	AC(N)
30	I FEEL AT EASE with my current POSITIVE feelings and emotions.	[Not at All] to [Completely]	AC(P)
31	I FEEL AT EASE with my current NEGATIVE feelings and emotions.	[Not at All] to [Completely]	AC(N)
32#	I am having difficulty MAKING SENSE out of my current POSITIVE feelings and emotions.	[Not at All] to [Extremely]	CL(P)
33#	I am having difficulty MAKING SENSE out of my current NEGATIVE feelings and emotions.	[Not at All] to [Extremely]	CL(N)
34#	I am CONFUSED about my current NEGATIVE emotions and feelings.	[Not at All] to [Extremely]	CL(N)
35#	I am CONFUSED about my current POSITIVE emotions and feelings.	[Not at All] to [Extremely]	CL(P)
36	I am CLEAR about what POSITIVE emotions or feelings I am currently experiencing.	[Not at All] to [Extremely]	CL(P)
37	I am CLEAR about what NEGATIVE emotions or feelings I am currently experiencing.	[Not at All] to [Extremely]	CL(N)
38	I am currently AVOIDING a SOCIAL SITUATION.	[Not at all] to [Extremely]	AV

39	I am currently WORRIED about what OTHER PEOPLE are THINKING of me.	[Not at all] to [Extremely]	SA
40	I am currently AFRAID OTHER PEOPLE have NOTICED my SHORTCOMINGS.	[Not at all] to [Extremely]	SA
41	I am currently AFRAID that others DO NOT APPROVE of me.	[Not at all] to [Extremely]	SA
42	I am currently WORRIED that I may SAY or DO the WRONG THING(S).	[Not at all] to [Extremely]	SA
43	I am currently FINDING it HARD to INTERACT with OTHER PEOPLE.	[Not at all] to [Extremely]	SA
44	I am currently feeling EMBARRASSED.	[Not at all] to [Extremely]	SA
45	I am currently feeling KEYED UP or ON EDGE.	[Not at all] to [Extremely]	GA
46	I am currently having DIFFICULTY CONCENTRATING.	[Not at all] to [Extremely]	GA
47	I am currently experiencing MUSCLE TENSION.	[Not at all] to [Extremely]	GA
48	I am currently feeling FATIGUED.	[Not at all] to [Extremely]	GA
49	I am currently feeling IRRITABLE.	[Not at all] to [Extremely]	GA
50	I am currently feeling WORRIED.	[Not at all] to [Extremely]	GA
51	I am currently having DIFFICULTLY CONTROLLING any WORRY I may be feeling.	[Not at all] to [Extremely]	GA
52	What are you currently WORRYING ABOUT (Check ALL that apply)?	[Not Applicable/Not Worried] or [Work/School/Studying] or [Family/Friends/Social] or [My Health/Health of Others] or [Community/World Affairs] or [Other]	XX
53	I am currently OUTWARDLY EXPRESSING POSITIVE feelings and emotions.	[Not at all] to [Extremely]	EE(P)
54	I am currently OUTWARDLY EXPRESSING NEGATIVE feelings and emotions.	[Not at all] to [Extremely]	EE(N)

Note. Items 1-6 were always presented first. The remaining items (7-54) were always presented in random order. Items labeled with "#" were reverse scored. AT(P) = attention/awareness of positive emotions; AT(N) = attention/awareness of negative emotions; CS = aspects of the current situation; SA = social anxiety symptoms; GA = generalized anxiety symptoms; AV = social avoidance; AC(P) = acceptance of positive emotions; AC(N) = acceptance of negative emotions; EI(N) = intensity of negative emotions; EI(P) = intensity of positive emotions; CL(P) = clarity of positive emotions; CL(N) = clarity of negative emotions; EE(P) = expression of positive emotions; EE(N) = expression of negative emotions; XX = items not included utilized in the current study.

Appendix C

Participant Recruitment Materials

i. Electronic Mail Recruitment, Scheduling, and Reminder

Templates

a. Initial Solicitation

b. Scheduling

c. Confirmation

d. Solicitation Following Initial Interest with no

Response

e. Request to Reschedule Following a Missed

Appointment

f. Reminder of Scheduled Appointment

g. End of Participation Reminder

ii. Telephone Recruitment Scripts

a. Live Solicitation

b. Voicemail Solicitation

Subject: UNL Psychology Research - Earn up to $45!

Hello.

You previously participated in a survey research study conducted in the Psychology Department at UNL. As part of that study, you requested to be contacted regarding future research opportunities. *The purpose of this message is to inform you that based upon your responses, you have been selected to participate in another research study that is currently underway.* This study will provide you the opportunity to learn about yourself, earn some money, and maybe even have some fun – all while contributing to science! If you are interested, please read on . . .

This study employs an innovative technique called "experience-sampling," which involves having participants carry a personal digital assistant (PDA) device and report about their experiences over the course of one week. Participants will not be asked to modify, alter, or change their daily routines in any way – they will simply be asked to live their lives as usual and report information on such things as what they are doing, who they are with, and what emotions they are experiencing. All information gathered is strictly confidential. *Participants will earn up to $45 for full completion of the study.*

If you are interested in participating or simply want more information about the study, please reply to UNLpalmstudy@hotmail.com expressing your interest. Slots are filling quickly, so please respond as soon as possible. For tracking and confidentially purposes, you have been assigned a numeric code (#xx). Please include this number in all correspondence with us.

Thank you for your time and we hope to hear from you!

Nathan Miller, M.A.
Project Coordinator
Anxiety Research Lab

Debra Hope, Ph.D.
Director
Anxiety Research Lab

Subject: UNL Research Study - Scheduling

Hello.

Thank you for your interest in our study! The first step of participation involves attending a brief (approximately 50 minute) training session conducted by a researcher. The purpose of training is to learn about the study's procedures, and if you decide to participate, to be assigned a PDA device. All meetings are group format and are held in Burnett Hall on the UNL main campus. The following slots are currently available:

Day:	Date:	Time:	Room:
xxxxx	xxxxx	xxxxx	xxxxx

Please reply to UNLpalmstudy@hotmail.com indicating your preferred meeting time(s). It may be helpful to list multiple times, as slots are filling up fast! You are unable to attend any of these sessions, let us know and we will let you know when new sessions open. Be sure to let us know if you have any questions or concerns. For tracking and confidentially purposes, you have been assigned a numeric code (#xx). Please include this number in all correspondence with us.

Thank you again for your time and interest.

Nathan Miller, M.A.
Project Coordinator
Anxiety Research Lab

Debra Hope, Ph.D.
Director
Anxiety Research Lab

Subject: UNL Research Study - Confirmation

Hello.

Thank you again for your interest in our study. You have been scheduled on xxxxx at xxxxx in room 67 Burnett to participate a brief training session (approximately 50 minutes). The purpose of this session is to provide an introduction to the study and assign Palm devices. **Please bring your UNL student ID.** If you are under 19 years of age you must bring a signed parental consent form to participate. Please let us know if you need a copy of this form.

Please contact us via email (UNLpalmstudy@hotmail.com) if you need to cancel or reschedule or if you have any questions or concerns. For tracking and confidentiality purposes, you have been assigned a numeric code (#xx). Please include this number in all correspondence with us.

Thank you again for your time and interest and we look forward to meeting with you.

Nathan Miller, M.A.
Project Coordinator
Anxiety Research Lab

Debra Hope, Ph.D.
Director
Anxiety Research Lab

<u>Subject: UNL Paid Research Opportunity – Don't Miss Out!</u>

Hello.

You previously indicated interest in participating in a PAID research study being conducted in the Psychology Department at UNL this semester and over the summer. You were previously offered some available times for a brief training session to begin participation in the study. Because we had not yet heard back from you, we are sending you and this follow-up email just in case you are still interested in participating. Don't miss out on this opportunity to learn about yourself, earn some money, and maybe even have some fun – all while contributing to science!

The first step of participation involves attending a brief (approximately 50 minute) training session run by a researcher. The purpose of training is to learn about the study's procedures and to be assigned a PDA device. All meetings are group format and are held in Burnett Hall on the UNL main campus. The following slots are currently available:

Day:	Date:	Time:	Room:
xxxxx	xxxxx	xxxxx	xxxxx

Please reply to <u>UNLpalmstudy@hotmail.com</u> indicating your preferred meeting time. If none of these times work for you, let us know and we will let you know when new sessions open. Be sure to let us know if you have any questions or concerns. For tracking and confidentially purposes, you have been assigned a numeric code (#xx). Please include this number in all correspondence with us.

Thank you for your time and interest.

Nathan Miller, M.A.
Project Coordinator
Anxiety Research Lab

Debra Hope, Ph.D.
Director
Anxiety Research Lab

Subject: UNL Paid Research Opportunity – Reschedule

Hello.

You previously indicated interest in participating in a paid research study being conducted in the Psychology Department at UNL. According to our records, you had been scheduled for xxxxxx at xxxxx. Because you did not attend the session, we are wondering whether you are interested in rescheduling.

As we previously mentioned, the first step of participation involves attending a brief (approximately 45 minute) training session run by a researcher. The purpose of training is to learn about the study's procedures and to be assigned a PDA device. All meetings are group format and are held in Burnett Hall on the UNL main campus. The following slots are currently available:

Day:	Date:	Time:	Room:
xxxxx	xxxxx	xxxxx	xxxxx

Please reply to UNLpalmstudy@hotmail.com indicating your preferred meeting time. If none of these times work for you, let us know and we will let you know when new sessions open. Be sure to let us know if you have any questions or concerns. For tracking and confidentially purposes, you have been assigned a numeric code (#xx). Please include this number in all correspondence with us.

Thank you for your time and interest.

Nathan Miller, M.A.
Project Coordinator
Anxiety Research Lab

Debra Hope, Ph.D.
Director
Anxiety Research Lab

<u>Subject: UNL Paid Research Opportunity – Reminder</u>

Hello. This email is a brief reminder that you have agreed to participate in a research study being conducted at UNL. Please plan to attend the training session (approx. 50 min.) in room xx Burnett on xxxx at xxxx pm. If you are under 19 years of age, please bring a parental consent form. Let us know if you have any questions and thank-you again for your interest!

Nathan Miller, M.A.
Project Coordinator
Anxiety Research Lab

Debra Hope, Ph.D.
Director
Anxiety Research Lab

<u>Subject: UNL Paid Research - End of Study Reminder</u>

Hello. This email is a brief reminder that your participation in our study will soon be coming to an end. The device should indicate to you that the study is complete within the next few days. At that time, please return the Palm to the front office at the Psychological Consultation Center (PCC) in 325 Burnett. Following receipt of the device we will send you a debriefing document telling you more about the study. Your payment should arrive within a few weeks.

Please let us know if you have any questions and thank-you again for your interest!

Nathan Miller, M.A.
Project Coordinator
Anxiety Research Lab

Debra Hope, Ph.D.
Director
Anxiety Research Lab

[Telephone Script-Live]

Hello, this is _____, and I am a researcher in the psychology department at the University of Nebraska-Lincoln.

You may remember previously participating in a survey research study in which you requested to be contacted regarding future research opportunities. We are calling to inform you that you have been selected to participate in another research study and we are wondering whether you would be interested.

We have made several attempts to contact you via email but we wanted to phone you just in case you had forgotten or not received our messages. Participants will earn up to $45 for full completion of the study. Note that participation is completely optional. Are you interested in hearing more?

[If yes...]
This study employs an innovative technique called "experience-sampling," which involves having participants carry a personal digital assistant (PDA) device and report about their experiences over the course of one week. Participants will not be asked to modify, alter, or change their daily routines in any way – they will simply be asked to live their lives as usual and report information on such things as what they are doing, who they are with, and what emotions they are experiencing. All information gathered is strictly confidential. The first step of participation involves attending a brief (approximately 45 minute) training session conducted by a researcher. The purpose of training is to learn about the study's procedures, and if you decide to participate, to be assigned a PDA device. All meetings are group format and are held on the UNL main campus.

[If still interested, confirm their email address and tell them…] We will send you an email with available times to complete the initial training. Slots are filling quickly, so please respond as soon as possible. Thank you for your time and we hope to hear from you!

[If at any time they indicate that they are not interested...] Thank you for your time. If you happen to change your mind in the future, we can be contacted at UNLpalmstudy@hotmail.com .

[Telephone Script-Voicemail]

Hello.

This is _____, and I am a researcher in the psychology department at the University of Nebraska-Lincoln.

You may remember previously participating in a survey research study in which you requested to be contacted regarding future research opportunities. We are calling to inform you that you have been selected to participate in another research study and we are wondering whether you would be interested.

We have made several attempts to contact you via email but we wanted to phone you just in case you had forgotten or not received our messages. Participants will earn up to $45 for full completion of the study. Note that participation is completely optional.

If you are interested in participating or simply want more information about the study, please respond to the email you should receiving shortly, or simply write an email to UNLpalmstudy@hotmail.com expressing your interest and a researcher will contact you via email.

Thank you for your time.

Appendix D

Participant Training Materials

i.   Training Materials

a.   General Training Manual

b.   Item Training Manual

c.   Return of Personal Digital Assistant (PDA)

Contract and Signaling Preferences

d.   Explanation Letter to Participants' Instructors

or Employers

ii. Experience-Sampling Item Guide

PalmPilot Study - Participant Manual

Overview of Main Points:
❖ Introduction to the study topic and format
❖ Operating the PDA
❖ Instructions for completing a session
❖ Participant responsibilities
❖ Compensation
❖ Contact information and FAQ's

Section 1: What We're Doing in the Study

We are interested in studying people's emotional lives, including their associated behaviors, attitudes, and experiences in everyday life. The format of this study may be new to you. Instead of a one-time deal where you fill out some questionnaires or take a test and then leave, this experiment will occur over a week's time and will require approximately 3-4 hours of your time in total. You will be given a personal digital assistant (PDA) device, in this case a PalmPilot, to carry with you, and at certain times it will beep and you will enter reports about what you are doing, thinking, and feeling. This allows you to tell us what you are thinking, feeling, and doing while you're thinking, feeling, and doing it, as opposed to asking you to remember something from awhile back. Furthermore, with multiple daily reports we are able to keep track how these things change or remain the same and interact over time. You will be provided more specific details about the study when data collection is completed.

Because of the ongoing nature of the study, you as a participant have a special responsibility. This study will last for one week, so that requires that you be engaged in the study for an extended period of time. It is particularly important that you have the same high level of commitment throughout the study. Each time you make a report, you must be as detailed, honest, and as thorough as the first time you tried it - otherwise, your answers will not reflect your actual behavior and experiences.

You might be wondering what's in it for you. Well, beyond the good feeling you will receive by contributing to important research, you will also be compensated financially, up to $45 total. "Participation" for a given day will be defined as successfully responding to at least 50% (4 out of 8) of the signals for that day. You will earn $2 for participation on day 1, $3 for day 2, $4 for day 3, $5 for day 4, $6 for day 5, $7 for day 6, and $8 for day 7 (up to $35 total). Further, you have the potential to earn

a $10 bonus for responded to 80% or greater of the signals over the entire study. *Basically, the payment system is designed to encourage you to respond to as many signals as possible, while understanding that you may not be able to respond to every signal.* It is worthwhile to note that in some cases the study may last 8 (rather than 7) days. The reasons for this are rather technical and not that interesting. If this happens to you, know that you are not doing more work than other participants. However, the payment scale in this case is $0 for participation on day 1, $2 for day 2, $3 for day 3, $4 for day 4, $5 for day 5, $6 for day 6, $7 for day 7, $8 for day 8 (up to $35 total). Further, you have the potential to earn a $10 bonus for responded to 80% or greater of the signals over the entire study.

The other thing that we must emphasize is the importance of behaving normally while you are enrolled in this study. We know that the pure act of paying specific attention to your behavior, thoughts, and feelings might change it, because you might discover things about yourself that you were not aware of before. However, it is most useful to us if we can study how you behave regularly. In other words, don't feel like you need to be on your "best" behavior or respond to questions in a way that you think is "correct." *Remember that there are not right or wrong answers – we are simply interested in your experiences as they occur in normal daily life.* You will probably get used to answering the questions after a short while, but until you do, please just act as you regularly would.

Section 2: Operating the PDA
You might be familiar with personal digital assistants (PDAs), but just in case, we are going to go over a few general functions you will need for this study. *All of the functions not associated with the study will be locked out, so you will not be able to use the PDA for anything but answering questions.* This will conserve battery life, and thus keep your information safe until we can get it from the PDA's memory at the end of your session.

Here is a picture of your Palm Pilot model:

This is the screen where all info. will be displayed

Your stylus is stored in a hole in the top of the Palm Pilot

Stylus – use for tapping the screen to indicate your responses

The screen is like a computer screen, and is where all the information will be displayed. You can tap it gently with the stylus to select things on screen. Think of the stylus as your mouse. *Never use a real pen of any kind on the Palm; this will ruin it.* Other soft objects, such as a pencil eraser or your finger may work in a pinch if you happen to lose the stylus.

Sometimes you may find yourself in a situation where you really don't want the Palm to signal (e.g., church, taking a test). If you desire the turn the alarm completely off, follow these instructions: (1) Turn on the Palm by pressing the button on the lower left corner of the face. (2) Use the stylus to tap the words "ESP is sleeping…" on the top left corner of the screen. This will present a drop-down menu. (3) Select "Alarms." (4) Select "Play sound (on)." (5) Again select "Alarms." It should now read "Play sound (off)." (6) Tap anywhere on the screen when you are done. *JUST BE SURE TO TURN THE ALARM BACK ON!*

Finally, you may be curious how you are doing filling out the questionnaires. At any time you can find out this information by following these instructions: (1) Turn on the Palm by pressing the button on the lower left corner of the face. (2) Use the stylus to tap the words "ESP is sleeping…" on the top left corner of the screen. This will present a drop-down menu. (3) Select "Help." (4) Select "How many questionnaires?" It will tell you how many questionnaires you have completed, partially completed, and skipped. (5) Select "OK" when you have the information.

Section 3: Palm Pilot Question Sessions

At random intervals on 8 occasions each day for 7-8 days, the Palm will signal a brief audible alarm when a session is to begin. When it alerts you, tap the screen gently with the stylus to begin the trial. If you do not respond, the alarm will continue for 5 minutes. The researcher will demonstrate the alarm before you leave today. Don't worry, the Palm will not signal in the middle of the night! *To better accommodate your schedule, the researcher will allow you to select a 14 hour window during which the device can potentially go off.* You can even set different windows for weekdays and weekends.
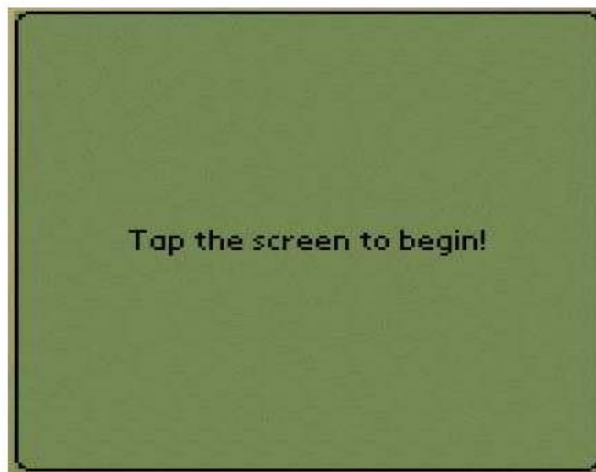
The questions will follow one another as you answer each one. You cannot skip questions or go back and change any previous answers. *With the exception of the first few items, they will be presented in a different order each time.* The manner in which you respond to various questions will not influence how many questions you have to answer. *You will answer every question at every session.* The question will always appear across the top of the screen with the answer options below. *Please read each item very carefully.* There are many questions, however, so don't feel like you have to spend a great deal of time debating each answer! *Each question session should take no more than approximately 3-5 minutes.*

It is very important to remember that you should respond to the various items with regard to what you are doing, thinking, and feeling JUST BEFORE THE ALARM WENT OFF. Different questions will have different answer formats. For example, one question may have you select a checkbox, whereas another question might ask you to press a labeled button (see example below).
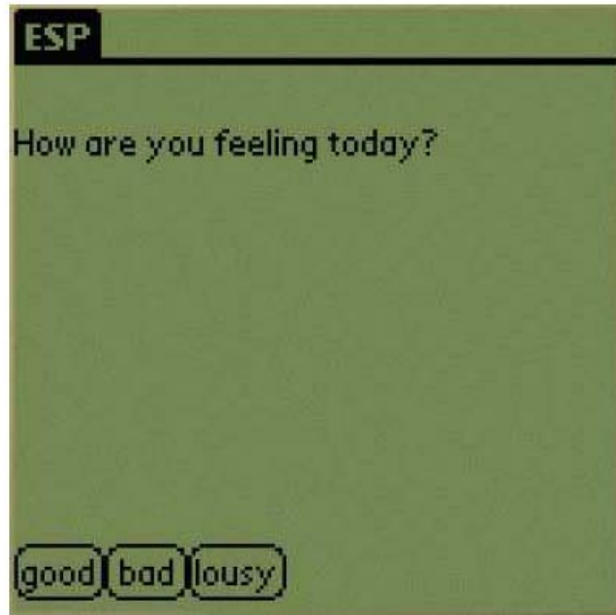
Most items will ask you to slide a tab on a bar. An example item of this type is presented below. Respond to these items by moving the slider bar to the position that best represents your current experience. When the item is first presented, the tab is always in the middle position. There are labels attached to the ends of the continuum. It is pretty rare that you will be making ratings all of the way to either end of the continuum. In fact, because in any given circumstance you are likely to be experiencing a relatively low amount of whatever the question is trying to measure, *we recommend first moving the slider all of the way to the left (i.e. "Not at all") and then moving it up from there.* You can move the tab either by directly moving it with the stylus, or by clicking the position where you want it to be.

How happy are you right now?

Move this
bar to
indicate

|--------------------------------||-----------------------|

Not at all   **Extremely**

Response
anchors

The researcher will take you through a practice set of questions before you leave today. When making ratings, be sure that you are rating only what is being measured by the item. Using the above item as an example, you would make your rating based upon how happy you are at this moment. A rating all of the way to the right means that you are "Extremely Happy," such as you feel after acing an exam, being asked out by someone you like, winning money, etc. A rating in the middle means that you are "Moderately Happy," such as you feel while hanging out with your best friend, getting a present, or receiving a compliment. A rating all of the way to the left means that you are "Not at all Happy," which means that you currently not feeling any happiness. *It is very important to realize that such a rating DOESN'T MEAN THAT YOU ARE NECESSARILY SP, but simply that you aren't experiencing the emotion of happiness at the moment.* Again, only rate what the question is asking and pay attention to the labels at the end of the continuum.

This example leads to another important distinction to remember for the purposes of this study. Most people think of positive and negative emotion as being on the same continuum of "good versus bad," as illustrated below.

Positive---**Negative**
Happy   *Anxious*
Relaxed   *SP*
Enthusiastic   *Lethargic*

However, this assumes that it is impossible to feel both positive and negative emotions at the same time. We know that this just isn't true. Have you ever had the experience of being anxious and excited at the same time? *We way we would like you to think about your emotions are*

that positive and negative emotions are actually each on their own continuum and therefore need to rated separately! See the below diagram that demonstrates this point.

```
                    High Positive Emotion
                    (e.g, Excited, Joyous)
                              |
                              |
                              |
                              |
                              |
Low Negative Emotion------------------High Negative Emotion
(e.g., Not Anxious)           |              (e.g., Anxious)
                              |
                              |
                              |
                              |
                              |
                    Low Positive Emotion
                 (e.g., Not Excited, Not Joyous)
```
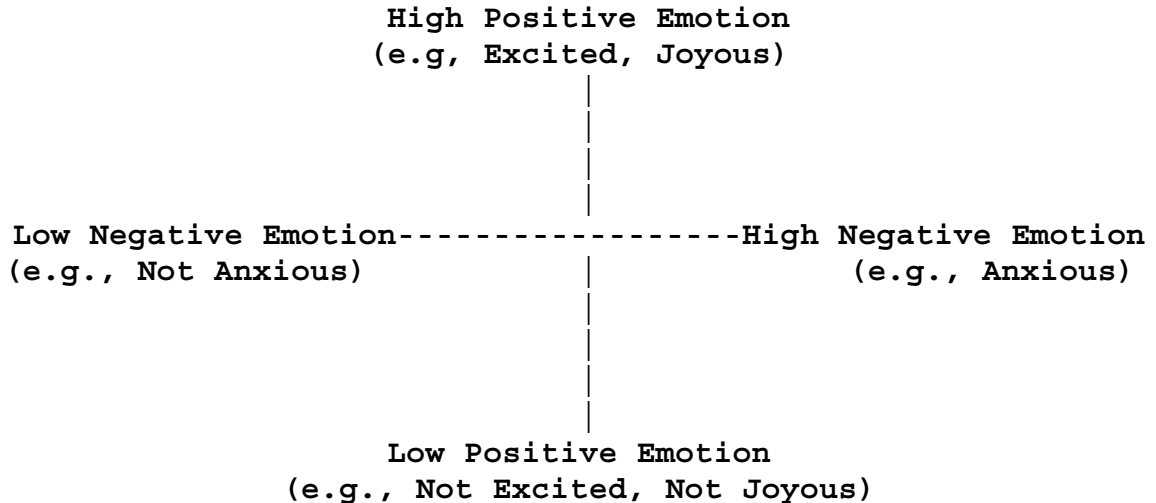
Section 4: Being a Participant

An important thing to remember is that you can be beeped at any time. This makes it imperative that you carry the PalmPilot with you wherever you go, and it might be better to carry it in your pocket or purse instead of your backpack so you are certain to hear it, and have access to it even when you're not in school. You will be paid according to how many signals you respond to, so it is to your advantage to complete as many as possible, even if it sometimes may be a little inconvenient. *However, it is completely up to you where you take the device.* Please do not attempt to respond to the device at a time that would get you in trouble (e.g., during a test) or is potentially dangerous (e.g., while driving). *It is always best to respond as soon as possible after the device signals. However, if you can't respond right at that moment, the device will wait for up to five minutes before going back into hibernation.* The researcher will demonstrate how to silence the alarm so that it doesn't go off at unwanted times. *Just be sure to turn the alarm back on!*

We understand that being a student, you likely spend a good deal of your day in class. Therefore, we have developed a letter that, if you choose, you can present to your instructor(s) to help them understand why you are carrying a PalmPilot that may signal in class. In the end, it is up to your instructor whether they are okay with you having the alarm turned on during class. You can also choose to simply turn the alarm off during classes or other

situations in which the alarm might be embarrassing or disruptive. All that we ask is that you don't allow the alarm to go off in class without first informing your instructor.

As you might imagine, these small electronics are quite valuable to us because of the data they carry, but also because they are expensive to purchase and repair. *You are therefore held personally responsible for the safe-keeping of the device for the entire time you have it.* You must take care to treat it gently so that it is not damaged while you use it. *You must also return it at the end of your session.* To encourage you to do this, we are having you sign a contract with all of your personal information and the identifier of the specific device you are given for use in the experiment. It is quite important that you bring it back safe and sound at the conclusion of your session. The device will tell you when the study is completed (on the 7th or 8th day). When this happens, it is your responsibility to return the device as soon as possible. If you will be unable to return the device within two business days, please email us to let us know. *Devices should be returned to the Psychological Consultation Center (PCC) in 325 Burnett Hall* - simply drop-off the device to the person working at the front desk. The clinic is generally open from Mondays – Thursdays from 9:00am – noon and from 1:00pm - 8:00pm and on Fridays from 9:00am – noon and from 1:00pm - 7:00pm.

Finally, we need to address honesty in completing the questionnaires. Given that this study requires a significant energy and that you get paid more for completing more question sessions, *we understand that you may at times experience some temptation to quickly skip through the questions without reading them or otherwise giving much effort*. We strongly encourage you against this for several reasons. First and foremost, doing so reduces the quality of the data and therefore weakens the chances meaningful things can be discovered. Second, all data will be run through several programs that are specifically designed to detect responses that are unrealistically quick or all follow the same pattern. You will not receive payment for these sessions. *The moral of the study is to take all of the question sessions seriously!*

Support and Troubleshooting

If at any time during your participation you have questions or problems with the procedure, PalmPilot, or anything else related to the experiment, you have a variety

of options at your disposal. First, we recommend you check
the FAQ (frequently asked questions) section of your
participant manual. If your question or concern is not
addressed there, you may want to contact the lab and get
help from a research assistant. The lab has an email
address (UNLpalmstudy@hotmail.com) and will be checked
often.

Frequently Asked Questions (FAQ)

Q: *How often and when will the Palm signal?*

A: Only during the 14 hour window you specify each day.
    It will generally signal at 8 random times per day (56
    total), covering between 7-8 days.

Q: *I can't turn my Palm on – what should I do?*

A: Your Palm will turn on by itself when a session is to
    begin. Otherwise, all other functions have been
    locked, so that the Palm can only be used to complete
    sessions. This is to preserve battery life and
    protect the information.

Q: *I'm worried that my battery might be getting low – how
    do I recharge it?*

A: The palms will be fully charged before you begin your
    participation, and the battery should remain charged
    until well after you're finished. Locking out the
    other functions is partially to conserve battery life.

Q: *Will I be penalized for missing a session?*

A: You should make every effort to complete the sessions
    as they arise. This being said, we understand that
    there are some situations where it is impossible to
    complete a session (e.g., during class, when you are
    driving, while bathing, etc.). If you can access your
    Palm when it beeps, but you are unable to complete a
    session, you can wait for up to 5 minutes. If you do
    not respond in that amount of time, the session will
    terminate automatically and it will not be counted as
    a completed session. Remember that you can receive a
    bonus for completing a high percentage of sessions.

Q: *What if I have to stop in the middle of a session and
    can't finish it?*

A: Most of the reports will only take a few minutes to
    get completely finished. If you are coming up on a
    deadline, such as the beginning of a class, try to get
    as far as you can - you might be able to finish. If

you are unable to complete a report you have started,
the session will time out after 5 minutes of
inactivity. However, if you believe you will be able
to get back to the report in a short amount of time,
check to see if it is still active, because the time
might not have passed.

Q: *I haven't been beeped in several hours - is my Palm
      broken?*
A: If it has been more than a 6-7 hours since the Palm
      initiated a session, and you are confident you didn't
      miss a session, contact our lab via email ASAP for an
      RA to look at it. It might be a dead battery, or it
      might be a faulty function of the program.

Q: *My Palm beeped loudly during class- how do I make it
      shut up quickly if I need to?*
A: You can make the Palm silent by tapping the screen
      once (even using your fingernail will work). What
      this does is begin the session, so if you are in a
      situation where you cannot complete a session right
      then, it will either time out, or you can see if it is
      still going when you're finished with the conflict and
      complete it then.

Q: *How do I turn the alarm off so it won't beep until I
      turn it back on?*
A: (1) Turn on the Palm by pressing the button on the
      lower left corner of the face. (2) Use the stylus to
      tap the words "ESP is sleeping…" on the top left
      corner of the screen. This will present a drop-down
      menu. (3) Select "Alarms." (4) Select "Play sound
      (on)." (5) Again select "Alarms." It should now read
      "Play sound (off)." (6) Tap anywhere on the screen
      when you are done. JUST BE SURE TO TURN THE ALARM BACK
      ON!

Q: *These questions keep asking me to report on my
      emotions. What if I'm just not experiencing much?*
A: It is not "wrong" to not be experiencing much emotion
      when the Palm signals you to enter information.
      Simply answer the questions the best that you can
      given what you are currently feeling and experiencing.

Q: *How do I use the slider bar again?*
A: You respond to these items by moving the slider bar to
      the position that best represents your current

experience. When the item is first presented, the tab is always in the middle position. There are labels attached to the ends of the continuum. It is pretty rare that you will be making ratings all of the way to either end of the continuum. In fact, because in any given circumstance you are likely to be experiencing a relatively low amount of whatever the question is trying to measure, *we recommend first moving the slider all of the way to the left (i.e. "Not at all") and then moving it up from there.* You can move the tab either by directly moving it with the stylus, or by clicking the position where you want it to be repetitively.

Q: *How do I check to see how many sessions I've completed?*
A: (1) Turn on the Palm by pressing the button on the lower left corner of the face. (2) Use the stylus to tap the words "ESP is sleeping…" on the top left corner of the screen. This will present a drop-down menu. (3) Select "Help." (4) Select "How many questionnaires?" It will tell you how many questionnaires you have completed, partially completed, and skipped. (5) Select "OK" when you have the information.

Q: *How much and by what means will I get paid?*
A: "Participation" for a given day will be defined as successfully responding to at least 50%   (4 out of 8) of the signals for that day. You will earn $2 for participation on day 1, $3 for day 2, $4 for day 3, $5 for day 4, $6 for day 5, $7 for day 6, and $8 for day 7 (up to $35 total). Further, you have the potential to earn a $10 bonus for responded to 80% or greater of the signals over the entire study (up to $45 total). After you return the Palm, you should receive a check in the mail within a few weeks time.

Q: *I want to change an answer – what do I do?*
A: At this time, you cannot skip questions or go back to change an answer.

Q: *How and when do I return the PalmPilot?*
A: The device will tell when all sessions have been completed. It is your responsibility to return the device as soon as possible when the study is over. If you will be unable to return the device within two

business days, please email us to let us know.
Devices should be returned to the Psychological
Consultation Center (PCC) in 325 Burnett Hall - simply
drop-off the device to the person working at the front
desk. The clinic is generally open from Mondays –
Thursdays from 9:00am – noon and from 1:00pm - 8:00pm
and on Fridays from 9:00am – noon and from 1:00pm -
7:00pm.

Q: *How can I learn more about the study?*
A: After you return the Palm, you will be mailed a
     debriefing form that tells you a little more about the
     study and its purpose. If you have further questions,
     feel free to contact the researchers at any time.

[On university letterhead]

Participant ID #_____   Palm # _____

PalmPilot Checkout Contract

I, the undersigned, agree to take care of the PalmPilot I
am receiving to participate in a study run by the
University of Nebraska – Lincoln's Anxiety Research Lab. I
will not use it for any other purpose aside from the study,
and I will return it at the conclusion of my participation.
I am aware that the PalmPilot is university property and
that I am responsible for damage to or loss of the device.
I understand that I will not receive compensation if the
device is lost, stolen, or returned significantly damaged.
Further, if I fail to return the device, I understand that
the researchers will take appropriate steps to recover the
university's property, which may include contacting the UNL
Campus Police. I agree to allow the researchers to make a
photocopy of my UNL ID card for security purposes.

Date _____   Phone _____

Name _____   Signature _____

Preferred Start and Stop Times

Weekdays (must cover 14 hrs): **Weekends** (must cover 14 hrs):

Preferred Start: _____:_____   Preferred Start: _____:_____
(No Later than 10 am)   (No Later than 10 am)

Preferred End: _____:_____   Preferred End: _____:_____
(No Later than Midnight)   (No Later than Midnight)

[On university letterhead]

Re: *2007 Psychology Research Participation*
     Emotional Life and Daily Experiences

Dear Professor/Instructor/Employer:

This letter is to inform you that the student presenting
you with this letter is participating in a study being
conducted by researchers in the Department of Psychology at
the University of Nebraska-Lincoln. This study involves
carrying a Personal Digital Assistant (PDA) device that
periodically produces an audible signal, prompting the
student to input information into the device. The nature
of the study requires that students carry these devices
with them everywhere they go over the course of a week's
time.

The devices are programmed to go off at random times during
the day. Therefore, it is possible that it may signal
during your class. It is important to note that on a given
day there is less than a 10% chance that it will signal
during a typical hour. Further, the audible signal is not
loud, making it less intrusive than the ring of a cellular
telephone. Should the device signal during class, the
student has been trained to silence it quickly, and has
been instructed not to complete any sessions that interfere
with their class work or that are disruptive to other
students.

The student is giving you this letter for your information
and to ask that you accommodate their participation.
However, if you strongly prefer that the student silence
the device while attending your class, they have been
instructed how to do this. We welcome your questions and
comments on our research or this student's participation.
Please don't hesitate to contact me by email at
UNLpalmstudy@hotmail.com.

Sincerely,

_____
Nathan A. Miller, M.A.
Doctoral Student, Psychology

_____
Debra A. Hope, Ph.D.
Advising Professor, Psychology

PalmPilot Study – Item Guide

*INSTRUCTIONS ◄——

Reminds you of some key
instructions. Will come up at
the beginning of every trial.
Also allows you to "pause" the
data entry, although doing it
right away is always best.

-99|Can You Enter Now? [YES] [NO]
-98|It is best to enter now, but if you can't I'll wait for up to FIVE MINUTES. Tap OK as
soon as you are ready. [OK]
-97|Answer the following questions with regard to your current feelings and activities
(i.e. just before the alarm went off). Tap OK to begin. [OK]
-96|When answering the questions, remember that POSITIVE and NEGATIVE emotions
are separate. POSITIVE emotions include feelings like joy, happy, amused, and proud.
NEGATIVE emotions include feelings like fear, guilty, irritable, and angry. [OK]
-95|For each item, first move the slider bar all of the way to the LEFT to start and then
slide it to the RIGHT indicating your desired response. Remember, responses range from
"Not at all" (far left) to "Moderately" (middle) to "Extremely" (far right) on the bar. [OK]

*ATTENTION/AWARENESS OF EMOTIONS ◄——

These items will always come
first. Simply rate how much you
were paying attention to your
emotions when the device
signaled.

-94|I am currently paying ATTENTION to my POSITIVE feelings and emotions.
[Not at All|Extremely]
-93|I am currently paying ATTENTION to my NEGATIVE feelings and emotions.
[Not at All|Extremely]
-92|I am currently THINKING ABOUT my POSITIVE feelings and emotions.
[Not at All|Extremely]
-91|I am currently THINKING ABOUT my NEGATIVE feelings and emotions.
[Not at All|Extremely]
-90|My current POSITIVE emotions and feelings are worthwhile and valuable.
[Not at All|Extremely]
-89|My current NEGATIVE emotions and feelings are worthwhile and valuable.
[Not at All|Extremely]

Only select ONE answer from the
options provided. Sometimes the
possible answers may overlap, so
select the one that BEST
describes.

*ASPECTS OF CURRENT SITUATION ◄——

1|WHERE are you? (Check the ONE that BEST describes)
[My Residence|Class/Study Location|Work|Public
Place/Outside|Family's/Friend's|Other]
2|WHO is with you? (Check the ONE that BEST describes)
[Alone|Roommates/Friends|Family|Professionals|Strangers|Other]
3|WHAT are you doing? (Check the ONE that BEST describes)
[Inactive/Resting|Studying/Working|Leisure/Socializing|Self-Maintenance|In-
Transit|Other]

*STATE NEGATIVE AFFECT ←

> Remember that negative and positive emotions are not just "two sides of the same coin."

4|I am currently feeling SLUGGISH. [Not at All|Extremely]
5|I am currently feeling AFRAID. [|Not at All|Extremely]
6|I am currently feeling SP. [Not at All|Extremely]
7|I am currently feeling ANGRY. [Not at All|Extremely]
8|I am currently feeling ANXIOUS. [Not at All|Extremely]

*STATE POSITIVE AFFECT

9|I am currently feeling RELAXED. [Not at All|Extremely]
10|I am currently feeling PROUD. [Not at All|Extremely]
11|I am currently feeling EXCITED. [Not at All|Extremely]
12|I am currently feeling APPRECIATIVE. [Not at All|Extremely]
13|I am currently feeling ENTHUSIASTIC. [Not at All|Extremely]

*STATE BASIC POSITIVE EMOTION

14|I am currently feeling HAPPY. [Not at All|Extremely]
15|I am currently feeling JOY. [Not at All|Extremely]
16|I am currently feeling AMUSED. [Not at All|Extremely]

*STATE BASIC NEGATIVE EMOTION

17|I am currently feeling NERVOUS. [Not at All|Extremely]
18|I am currently feeling GUILTY. [Not at All|Extremely]
19|I am currently feeling ASHAMED. [Not at All|Extremely]

*EMOTIONAL ACCEPTANCE

20|I am OKAY with my current POSITIVE feelings and emotions. [Not at All|Completely]
21|I am OKAY with my current NEGATIVE feelings and emotions. [Not at All|Completely]
22|I WANT to CHANGE my current POSITIVE feelings and emotions. [Not at All|Completely]
23|I WANT to CHANGE my current NEGATIVE feelings and emotions. [Not atAll|Completely]
24|I FEEL AT EASE with my current POSITIVE feelings and emotions. [Not at All|Completely]
25|I FEEL AT EASE with my current NEGATIVE feelings and emotions.[NotatAll|Completely]

*EMOTIONAL CLARITY

26|I am having difficulty MAKING SENSE out of my current POSITIVE feelings and emotions. [Not at All|Extremely]
27|I am having difficulty MAKING SENSE out of my current NEGATIVE feelings and emotions.
[Not at All|Extremely]
28|I am CONFUSED about my current NEGATIVE emotions and feelings.
[Not at All|Extremely]
29|I am CONFUSED about my current POSITIVE emotions and feelings.
[Not at All|Extremely]
30|I am CLEAR about what POSITIVE emotions or feelings I am currently experiencing.
[Not at All|Extremely]
31|I am CLEAR about what NEGATIVE emotions or feelings I am currently experiencing.
[Not at All|Extremely]

*SOCIAL ANXIETY/AVOIDANCE SYMPTOMS

32|I am currently AVOIDING a SOCIAL SITUATION.
[Not at all|Extremely]
33|I am currently WORRIED about what OTHER PEOPLE are THINKING of me.
[Not at all|Extremely]
34|I am currently AFRAID OTHER PEOPLE have NOTICED my SHORTCOMINGS.
[Not at all|Extremely]
35|I am currently AFRAID that others DO NOT APPROVE of me.
[Not at all|Extremely]
36|I am currently WORRIED that I may SAY or DO the WRONG THING(S).
[Not at all|Extremely]
37|I am currently FINDING it HARD to INTERACT with OTHER PEOPLE.
[Not at all|Extremely]
38|I am currently feeling EMBARRASSED.
[Not at all|Extremely]

*GENERALIZED ANXIETY SYMPTOMS

39|I am currently feeling KEYED UP or ON EDGE.
[Not at All|Extremely]
40|I am currently having DIFFICULTY CONCENTRATING.
[Not at All|Extremely]
41|I am currently experiencing MUSCLE TENSION.
[Not at All|Extremely]
42|I am currently feeling FATIGUED.
[Not at All|Extremely]
43|I am currently feeling IRRITABLE.
[Not at All|Extremely]
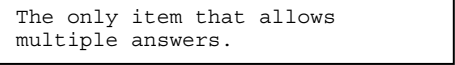
44|I am currently feeling WORRIED.
[Not at All|Extremely]
45|I am currently having DIFFICULTLY CONTROLLING any WORRY I may be feeling
[Not At All|Extremely]
46|What are you currently WORRYING ABOUT? (Check ALL that apply)
[Not Applicable/Not Worried|Work/School/Studying|Family/Friends/Social|My Health/Health of Others|Community/World Affairs|Other]

*EXPRESSION

The only item that allows
multiple answers.
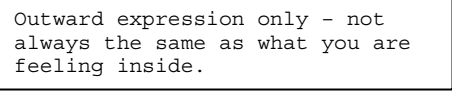
47|I am currently OUTWARDLY EXPRESSING POSITIVE feelings and emotions.
[Not at All|Extremely]
48|I am currently OUTWARDLY EXPRESSING NEGATIVE feelings and emotions.
[Not at All|Extremely]

Outward expression only – not
always the same as what you are
feeling inside.

Appendix E

Supplemental Data Tables

i.   Summary Frequencies of Experience-Sampling Signal

     Responses by Group and Item

ii. Correlation Matrix of Cross-Sectional Self-Report

     Measures (Full Sample)

iii. Intercorrelations of Constructs Assessed via

     Experience-Sampling

iv. Correlations Between Constructs Assessed via Cross-

     Sectional and Experience-Sampling Methods.

Summary frequencies of valid ES responses by item and group.

Item	Total N_{Obs}	%	SP N_{Obs}	%	GAD N_{Obs}	%	Control N_{Obs}	%
1	3306	40.32	772	40.63	893	38.83	1641	41.03
2	3399	41.45	790	41.58	923	40.13	1686	42.15
3	3422	41.73	792	41.68	925	40.22	1705	42.63
4	3367	41.06	788	41.47	911	39.61	1668	41.70
5	3444	42.00	801	42.16	927	40.30	1716	42.90
6	3370	41.10	781	41.11	916	39.83	1673	41.83
8	3460	42.20	808	42.53	935	40.65	1717	42.93
10	3457	42.16	808	42.53	934	40.61	1715	42.88
11	3453	42.11	805	42.37	934	40.61	1714	42.85
12	3441	41.96	805	42.37	929	40.39	1707	42.68
13	3427	41.79	793	41.74	929	40.39	1705	42.63
14	3427	41.79	797	41.95	923	40.13	1707	42.68
15	3429	41.82	799	42.05	929	40.39	1701	42.53
16	3433	41.87	801	42.16	928	40.35	1704	42.60
17	3438	41.93	799	42.05	929	40.39	1710	42.75
18	3440	41.95	796	41.89	932	40.52	1712	42.80
19	3431	41.84	793	41.74	931	40.48	1707	42.68
20	3433	41.87	802	42.21	926	40.26	1705	42.63
21	3440	41.95	802	42.21	929	40.39	1709	42.73
22	3437	41.91	799	42.05	924	40.17	1714	42.85
23	3433	41.87	800	42.11	927	40.30	1706	42.65
24	3435	41.89	797	41.95	926	40.26	1712	42.80
25	3428	41.80	794	41.79	931	40.48	1703	42.58
26	3421	41.72	793	41.74	925	40.22	1703	42.58
27	3433	41.87	797	41.95	926	40.26	1710	42.75
28	3425	41.77	797	41.95	925	40.22	1703	42.58
29	3431	41.84	795	41.84	922	40.09	1714	42.85
30	3435	41.89	799	42.05	930	40.43	1706	42.65
31	3432	41.85	797	41.95	928	40.35	1707	42.68
32	3434	41.88	796	41.89	929	40.39	1709	42.73
33	3433	41.87	795	41.84	930	40.43	1708	42.70
34	3433	41.87	798	42.00	928	40.35	1707	42.68
35	3432	41.85	794	41.79	928	40.35	1710	42.75
36	3424	41.76	790	41.58	926	40.26	1708	42.70
37	3431	41.84	799	42.05	929	40.39	1703	42.58
38	3427	41.79	801	42.16	923	40.13	1703	42.58
39	3431	41.84	796	41.89	929	40.39	1706	42.65
40	3442	41.98	799	42.05	935	40.65	1708	42.70
41	3427	41.79	797	41.95	923	40.13	1707	42.68
42	3426	41.78	795	41.84	926	40.26	1705	42.63
43	3430	41.83	791	41.63	928	40.35	1711	42.78
44	3426	41.78	793	41.74	928	40.35	1705	42.63
45	3431	41.84	799	42.05	929	40.39	1703	42.58
46	3422	41.73	790	41.58	922	40.09	1710	42.75
47	3436	41.90	805	42.37	923	40.13	1708	42.70
48	3437	41.91	795	41.84	936	40.70	1711	42.78
49	3434	41.88	798	42.00	927	40.30	1709	42.73
50	3443	41.99	800	42.11	929	40.39	1714	42.85
51	3439	41.94	799	42.05	927	40.30	1713	42.83
53	3442	41.98	801	42.16	930	40.43	1711	42.78
54	3428	41.80	801	42.16	923	40.13	1704	42.60
Mean	3429.96	41.82	796.87	42.26	926.91	40.70	1705.19	42.63

Note. SP = social phobia analogue group (*n* = 19); GAD = generalized anxiety disorder analogue group (*n* = 22); control (*n* = 41); total (*N* = 82). N_{Obs} = total number of observations; % = average number of observations per participant out of a possible 56.

Correlation matrix of cross-sectional self-report measures (full sample).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.SIAS	--														
2.SPDQ	.82***	--													
3.GAD-Q-IV	.43***	.48***	--												
4.PSWQ	.44***	.47***	.75***	--											
5.BDI-II	.49***	.49***	.55***	.52***	--										
6.PANAS-NA	.52***	.55***	.58***	.61***	.71***	--									
7.PANAS-PA	-.43***	-.39***	-.31***	-.33***	-.56***	-.37***	--								
8.ERQ-Supp	.40***	.28***	.14***	.07	.28***	.23***	-.24***	--							
9.ERQ-Reap	-.23***	-.24***	-.24***	-.26***	-.27***	-.25***	.35**	-.06	--						
10.DERS-Total	.53***	.52***	.51***	.53***	.70***	.68***	-.50***	.32***	-.34***	--					
11.DERS-Clarity	.44***	.40***	.33***	.33***	.54***	.48***	-.40***	.37***	-.25***	.71***	--				
12.DERS-Awareness	.27***	.21***	.10**	.08*	.29***	.18***	-.36***	.43***	-.28***	.48***	.51***	--			
13.DERS-Acceptance	.41***	.42***	.37***	.41***	.51***	.54***	-.30***	.26***	-.14***	.76***	.45***	.24***	--		
14.DERS-Strategies	.48***	.50***	.54***	.56***	.68***	.66***	-.46***	.21***	-.35***	.87***	.51***	.21***	.61***	--	
15.DERS-Goals	.30***	.33***	.37***	.43***	.42***	.43***	-.21***	.02	-.18***	.69***	.31***	.07	.41***	.60***	--
16.DERS-Impulse	.33***	.36***	.41***	.39***	.50***	.55***	-.31***	.31***	-.26***	.75***	.40***	.18***	.48***	.67***	.50***

Note. *N*'s = 740-781 due to missing data.
***p < .001, **p < .01, *p < .05.

Intercorrelations of constructs assessed via experience-sampling.

	1	2	3	4	5	6	7	8	9	10	11	12
1.Social Anx. Symp.	--											
2.Social Avoidance	.70***	--										
3.General Anx. Symp.	.68***	.58***	--									
4.Attention (Pos.)	.12	.01	.04	--								
5.Attention (Neg.)	.32**	.25*	.33**	.41***	--							
6.Acceptance (Pos.)	-.46**	-.50***	-.42***	.36**	-.09	--						
7.Acceptance (Neg.)	-.22*	-.36**	.34**	.10	.17	.40***	--					
8.Intensity (Pos.)	.28*	.15	.06	.65***	.19^	.20^	.24*	--				
9.Intensity (Neg.)	.82***	.75***	.83***	.07	.34**	.53***	-.42***	.17	--			
10.Clarity (Pos.)	-.75***	-.61***	-.61***	.03	-.12	.67***	.30**	-.17	-.65***	--		
11.Clarity (Neg.)	-.73***	-.52***	-.58***	-.07	-.09	.51***	-.35**	-.17	-.61***	.91***	--	
12.Expression (Pos.)	.29**	.18^	.16	.66***	.15	.09	.03	.77***	.24*	-.18	-.21^	--
13.Expression (Neg.)	.68***	.57***	.62***	.20^	.40***	-.42***	-.09	.32**	.67***	-.56***	-.47***	.43***

Note. Bolded values represent correlations between theoretically-similar constructs assessed via the two methods.
***p < .001, **p < .01, *p < .05.

Correlations between constructs assessed via cross-sectional and longitudinal methods.

Experience-Sampling	Cross-Sectional														
	SIAS	SPDQ	GAD-Q-IV	PSWQ	BDI-II	PANAS-NA	PANAS-PA	ERQ-Reap.	ERQ-Supp.	DERS-Clarity	DERS-Nonawr.	DERS-Nonacc.	DERS-Strag.	DERS-Goals	DERS-Impulse
1.Social Anx. Symp.	**.34****	**.35****	.06	.12	.30**	.31**	-.13	-.23*	.21^	.40***	.27*	.39***	.27*	.27*	.21^
2.Social Avoidance	**.34****	**.35****	.07	.13	.30**	.26*	-.20^	-.19	.19^	.38**	.24*	.30**	.34**	.22*	.35**
3.General Anx. Symp.	.23*	.21^	**.18**	**.26***	.36**	.32**	-.27*	-.18	.19^	.38***	.25*	.28*	.39***	.31**	.20^
4.Attention (Pos.)	-.18	-.11	-.07	-.26*	-.14	-.11	.10	.01	-.06	-.06	**.02**	-.20^	-.17	-.11	-.19
5.Attention (Neg.)	-.09	-.13	-.09	.15	-.18	-.14	.05	-.02	-.04	-.05	**-.07**	-.21^	-.07	-.21^	-.12
6.Acceptance (Pos.)	-.18^	-.15	-.01	-.15	-.27*	-.36**	.16	.13	-.11	-.29**	-.14	**-.24***	-.26*	-.23*	-.31**
7.Acceptance (Neg.)	-.24*	-.28*	-.05	-.20^	-.33**	-.30**	.30**	.25*	-.14	-.32**	-.15	**-.43*****	-.41***	-.42***	-.28*
8.Intensity (Pos.)	-.02	.03	-.02	-.13	-.14	-.08	**.20^**	.07	-.05	-.06	.00	-.23*	-.13	-.10	-.05
9.Intensity (Neg.)	.21^	.24*	.09	.17	.33**	**.32****	-.21^	-.36**	.13	.40***	.25*	.38***	.33**	.28*	.24*
10.Clarity (Pos.)	-.31**	-.28*	-.11	-.10	-.28*	-.36**	.13	.07	-.20^	**-.40*****	-.27*	-.36**	-.30**	-.21^	-.28*
11.Clarity (Neg.)	-.31**	-.29*	-.31**	-.13	-.29**	-.36**	.18	.15	-.23*	**-.35****	-.27*	-.37**	-.32**	-.23*	-.22^
12.Expression (Pos.)	.08	.04	-.11	-.20^	-.17	-.09	.18	-.04	**-.06**	.03	.01	-.18	-.13	-.09	-.18
13.Expression (Neg.)	.10	.14	.02	-.01	.03	.11	.01	-.16	**-.02**	.23*	.00	.09	.19^	.15	.12

Note. ***p < .001, **p < .01, *p < .05.